

western industry

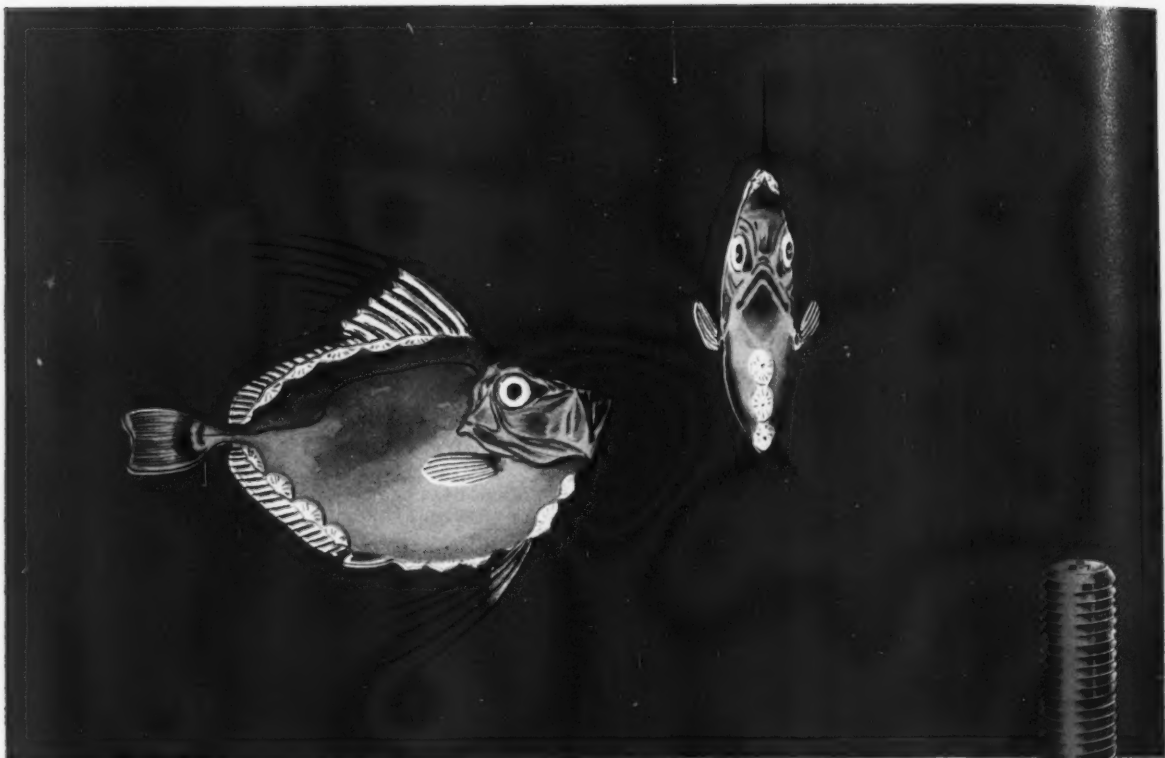


Operator carefully focuses on enlarged part drawing for photo milling. See page 21.



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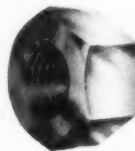
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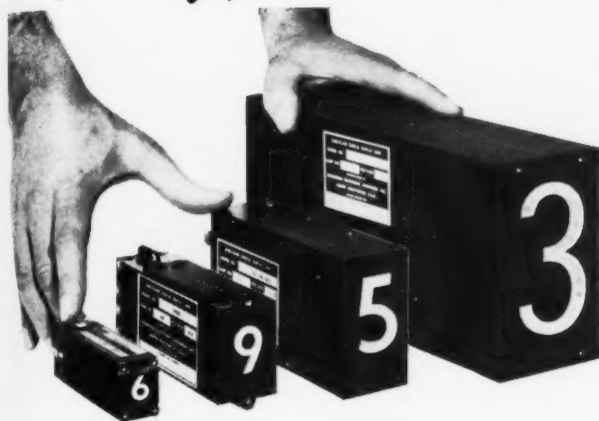
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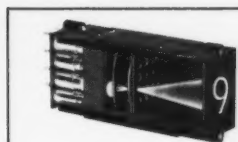
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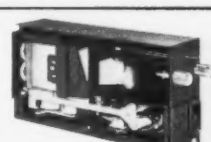
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Realistically priced and designed with the user in mind, IEE's fine line of **Rear-Projection Type Displays** pioneered the field for fast, accurate, dependable readout displays. Exclusive features include single-plane in-line presentation, no moving parts, minimum of maintenance, low unit cost.

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Cutaway View of Series 10000 Digital Readout



Cutaway View of Bina-View Digital Readout

Series 10000

The leader in projection-type digital readouts! Character size 1" high approx. \$18.00 complete.



Series 20000

An assembly of Series 10000 units. Available in groups with brackets for easy panel mounting.



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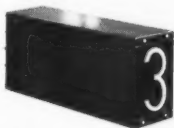
Series 130000

An assembly of Series 120000 units. Brackets provided for easy panel mounting.



Series 80000

Large character size 3 3/4" high. \$33.00 complete.



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The types of materials which may be fabricated through the use of photo-etching techniques are virtually unlimited. Size, shape, and complexity of the finished part is limited only by the imagination of the designer. Write or call today for complete details.

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- | | | |
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COVER PHOTO

PHOTO MILLING process consists of transferring a photographic image to a photo-sensitive plate, which in turn is chemically etched. Here operator carefully focuses camera on greatly enlarged drawing of part at Industrial Electronic Engineers, North Hollywood, Calif.

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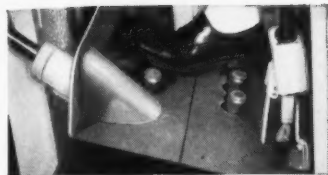
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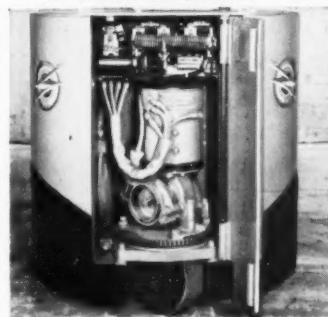
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Here's a new counterbalanced truck that can speed up handling of goods in narrow aisles, trailer trucks and on crowded docks. The model RST is ideally suited for warehouse operations, light industry, and retail supermarket handling. Pallet loads of groceries can be moved directly into the store. Compact design, short turning radius and good weight distribution make an outstanding unit for working inside trailer trucks or in buildings with limited floor capacities. Even the price is compact! Contact your nearest dealer for details.



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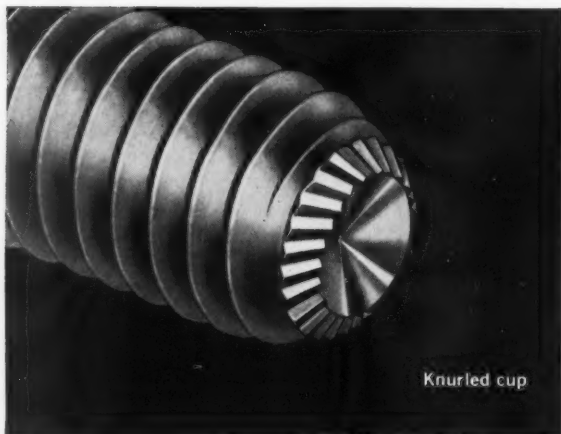
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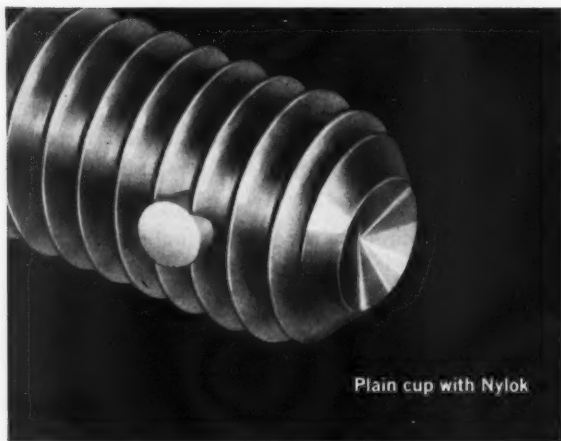
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You name the assembly . . .

UNBRAKO has the most complete range of set screws that save time, hold tight



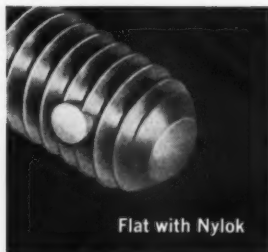
Knurled cup



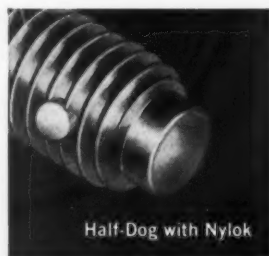
Plain cup with Nylok



Cone with Nylok



Flat with Nylok



Half-Dog with Nylok



Oval with Nylok

When you put a socket set screw to work you want it to assemble quickly . . . and stay tight. In the complete UNBRAKO set screw family, you will find precision, ease of assembly, and maximum holding power.

UNBRAKO with Knurled Cup Point.* Ideal where quick and permanent location of gears, collars and pulleys on shaft is called for, this set screw is at least *five times as vibration resistant* as its closest competitor.

UNBRAKO with Plain Cup Point and Nylok.† Also self-locking, this set screw—owing to the resilient nylon pellet—locks securely in place whether seated or not. Use it against shafts too hard for the knurled cup point to bite into or where fine adjustments must be held.

UNBRAKO Cone, Half-Dog, Flat and Oval Points. Sometimes neither the knurled cup nor the plain cup with Nylok will suit your assembly's requirements. Then one of the following point types will be chosen:

- **Cone**—for permanent location of parts; as a pivot in machine design (when point has hardness of at least RC 45); for making fine adjustments over a limited distance.
- **Half-Dog**—for permanent location of parts; in place of dowel pins; against hardened members or on hollow tubing when Nylok insert is also used.
- **Flat**—for frequent resetting of one machine part in relation to another; as an adjusting screw for fine linear adjustments; where wall is thin; on top of plugs made of soft material.
- **Oval**—for frequent adjustment without excessive deformation of part against which it bears. Also for seating against angular surface.

To build in a guarantee of locking, you will want the Nylok feature on all set screws except those with the knurled cup point.

• • •

UNBRAKO socket set screws are available in sizes #0 through 1 in. in alloy and #0 through 1/2 in. in stainless steels. Your authorized UNBRAKO distributor has a *complete supply* always on hand. For booklet on UNBRAKO High Torque Set Screws, write to Standard Pressed Steel Co., INDUSTRIAL FASTENER DIVISION, SPS, JENKINTOWN 47, PENNSYLVANIA.

*Standard, at no extra cost

†T.M. Reg. U.S. Pat. Off., The Nylok Corporation

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WESTERN INDUSTRY/MAY 1961

**"You feel the
difference
with a
KOOLIE HAT wheel . . .**

"I can work almost half again as long without getting an ache in the wrist and arm muscles," says Walt Via (shown above grinding a Utility Trailer king-pin assembly).

"...even after a long stretch of grinding, I'm not tired. Its unusual shape makes grinding hard-to-get-at spots easy." That's what Operator Walter Via says about the Koolie Hat wheels he's been using at Utility Trailer Manufacturing Company, Los Angeles, one of the West Coast's biggest manufacturers of custom-built trailers.

Here's *why* Bay State's unique reinforced resinoid disc-wheel is the least fatiguing, fastest, safest wheel on the market:

Easier Operation "Koolie Hat" wheel is held at 4° to 5° angle instead of 25° to 30°, requires less pressure, virtually eliminates jitter and bounce.

Extra Safety "Koolie Hat" shape wears evenly over all three abrasive layers instead of one at a time. Less danger of shattering due to heat cracks or thinning of wheel.

More Uniform Speed Narrow radial contact surface between "Koolie Hat" wheel and surface keeps speed high for fast, efficient metal removal without heat build-up.

If you want to give your operators (and your profit curve) these advantages, get the full story from your Bay State distributor or direct factory representative. *Better grinding at lower cost, that is their business.*



Bay State representative Emil F. Rogers (left) shows the unique shape of the Koolie Hat wheel to Utility Trailer's Director of Purchasing, Virgil D. Waters (right) and Lead Operator Walter Via (center).

NEW U-grade formulation complements original "Koolie Hat" R-grade wheel, ensures extra-long life when grinding all materials with higher speed grinders operating at 5200 r.p.m. or above.



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ABRASIVES**

Bay State Abrasive Products Co., Westboro, Massachusetts.
West Coast Headquarters: 3480 Cherry Ave., Long Beach, Calif., Phone: GARfield 7-2983, 7-4947

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western
industry

**western
meetings**

NEMA Holds First Western Conference

LOS ANGELES HAS BEEN selected as the site for the first Western conference of the National Electrical Manufacturers Association. On June 8 and 9, representatives from member companies will meet at the Biltmore Hotel. Arrangements are under the direction of co-chairman A. Arval Morris, president, Electra Motors, Inc., Anaheim, Calif., and Raymond M. Waggoner, vice president, Hubbard and Company, Emeryville, Calif.

The conference is planned primarily for member companies located in the West and for Western representatives of members headquartered in other sections of the country.

Preliminary plans call for starting the conference with a luncheon June 8, to which all sales allies of electrical manufacturers will be invited. Included will be electrical distributors, contractors, utilities, dealers, and other branches of the electrical industry. A. G. R. Fraser, NEMA president, will preside.

A general meeting is planned for that afternoon with authorities in and outside the industry discussing such subjects as Research and Development, Effects of Imports on the Electrical Industry and Business Trends Today and Tomorrow. The day will close with a reception and buffet supper.

The June 9 meeting is primarily of interest to electrical manufacturers. Its purpose is to review NEMA operation, discuss the association's growing interest in the West and devote time and study to safety regulations and product standards as they affect Western manufacturers specifically and the electric industry generally. The Conference will close with a luncheon.

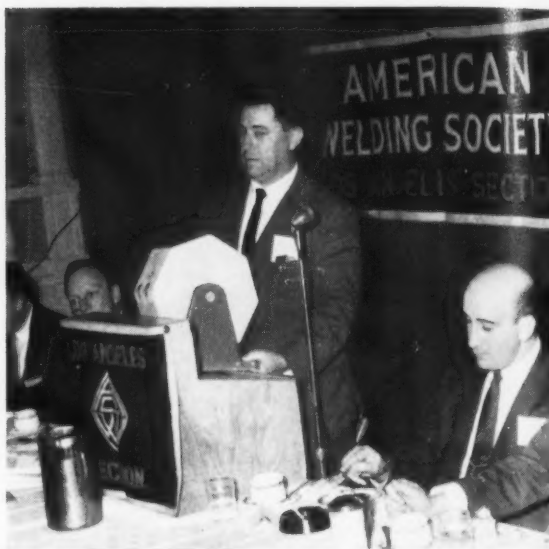
In addition to the two days conference, plans are being made for several group meetings including special sessions for manufacturers of electric house heating equipment, lighting equipment, and appliances.

Portland, Ore., will be site of Corrosion Engineer Conference

THE WESTERN Regional Conference of the National Association of Corrosion Engineers will be held October 4-6 at Portland, Ore., in the Benson Hotel.

Officials for the conference are Don D. McGregor, U. S. Engineers, general arrangements chairman; John Van Bladeren, Northwest Natural Gas Co., technical program chairman; William H. Kipp, Jr., Waterworks Supplies Co., local arrangements and entertainment chairman; John Moeller, Lloyd Center, registration chairman; Joseph R. Smith, Northwest Natural Gas Co., publicity and printing chairman; and Jack Malmquist, W. P. Fuller, inspection, field trips and transportation chairman.

Rocket Engine Development Is Subject of Welding Engineers' Meeting



JOHN WILEY, Chairman, Los Angeles Section, American Welding Society, clears the podium preparatory to the introduction of guest speaker, Dominick Sanchini of Rocketdyne, shown at right. Sanchini discussed the design and development of the new 1,500,000 pound thrust Rocketdyne F-1 engine.

AT A RECENT MEETING of the Los Angeles Section, American Welding Society, Dominick J. Sanchini, assistant program engineer of the NASA sponsored program for the 1,500,000 lbs. thrust liquid propellant rocket engine under development by Rocketdyne, was guest speaker. Sanchini's subject was "The development of high-thrust engines for large vehicles." He spoke on the design, development program, and application of the 1,500,000 thrust Rocketdyne F-1 engine. Included was a discussion of the F-1 test facilities and the development program status to date. Accompanying the talk were slides and a 17-min. color motion picture concerning progress made in the missile engine field.

The meeting was opened by chairman, John Wiley, who introduced the officers and guests, and received reports from various committee chairmen. The meeting was then turned over to vice chairman, Al Collin, who introduced the guest speaker.

Filament Winding Symposium a success

THE FIRST national industry-wide symposium on the space age subject of filament winding was held recently at the Huntington-Sheraton Hotel, Pasadena, Calif. Some 700 engineers and scientists attended this symposium sponsored by the Society of Aerospace Material and Process Engineers in cooperation with the Army, Navy, and Air Force.

Filament-winding, the state of the art, materials, design consideration, manufacturing and test methods, and applications were reviewed and discussed. Speakers and panelists included many specialists from governmental agencies, as well as manufacturers and material suppliers.

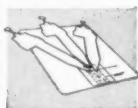
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The "Multiples" that keep assembly costs down while increasing production and profits are standard Milford rivet-setting machines operating as a unit. The Milford line is designed as "building blocks" for multiple units to suit your automatic riveting needs. They can be flexibly regrouped to meet the next, low cost assembly requirement.

The narrow wedge shape of Milford's No. 56 and 57 permits grouping to set rivets head to head and, when grouped, the cost of labor and burden is divided by the number of heads in the unit. Write for Milford's Engineer's Kit, so you can explore the profit multiplying possibilities of Milford "Multiples" first hand. Or we'll be glad to quote on your needs immediately.

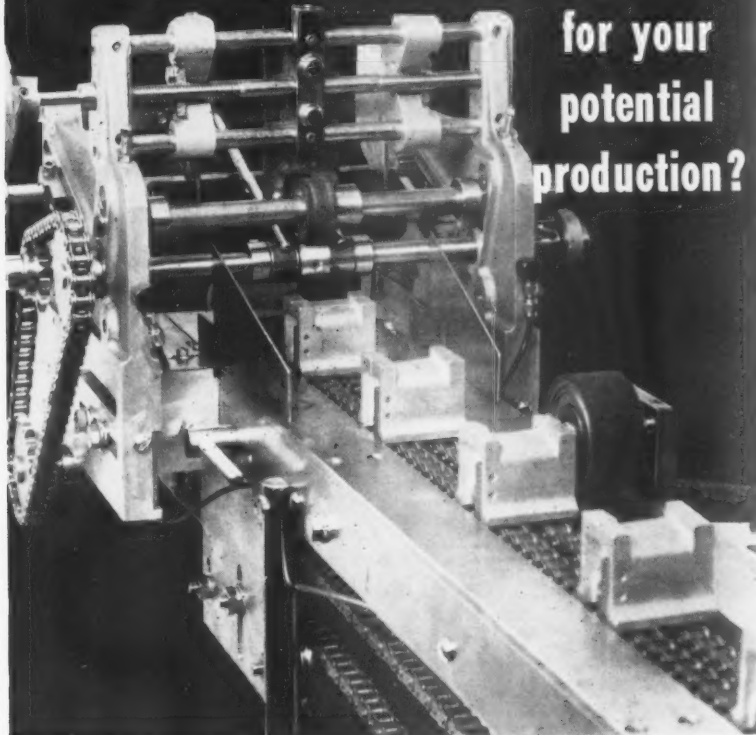


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WESTERN INDUSTRY/MAY 1961

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TRANSMISSION ADEQUATE**
for your
potential
production?



If you're not getting over 98% of the power furnished by the driving sprocket, you're increasing costly production and maintenance time. With Acme roller chain drives, there is practically no loss of ratio of energy between driving and driven members.

Acme chains are rigidly built of hardened steel, heat treated according to specific requirements of each part to assure long service with a minimum of maintenance, vital to maximum production.

Step up production by specifying Acme chains, available in all sizes from 1/4" pitch to 2 1/2" pitch.

See your Industrial Distributor for off-the-shelf service on chains, sprockets, flexible couplings and attachments.



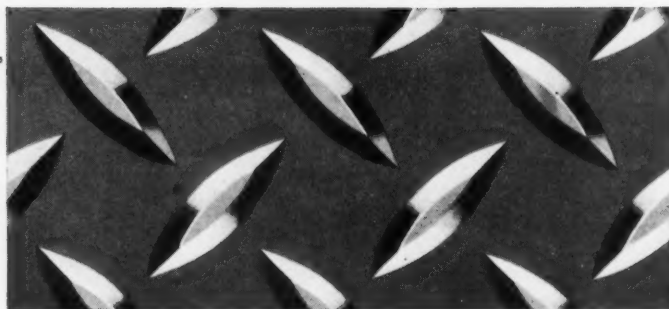
Write Dept. 2-D
for new ill. 100 page catalog with engineering section.



RELIABLE CHAIN DRIVES FOR ALL INDUSTRIES

ROLLER CHAINS, SPROCKETS, CONVEYOR CHAINS, FLEXIBLE COUPLINGS, ATTACHMENTS. (Special and Standard)

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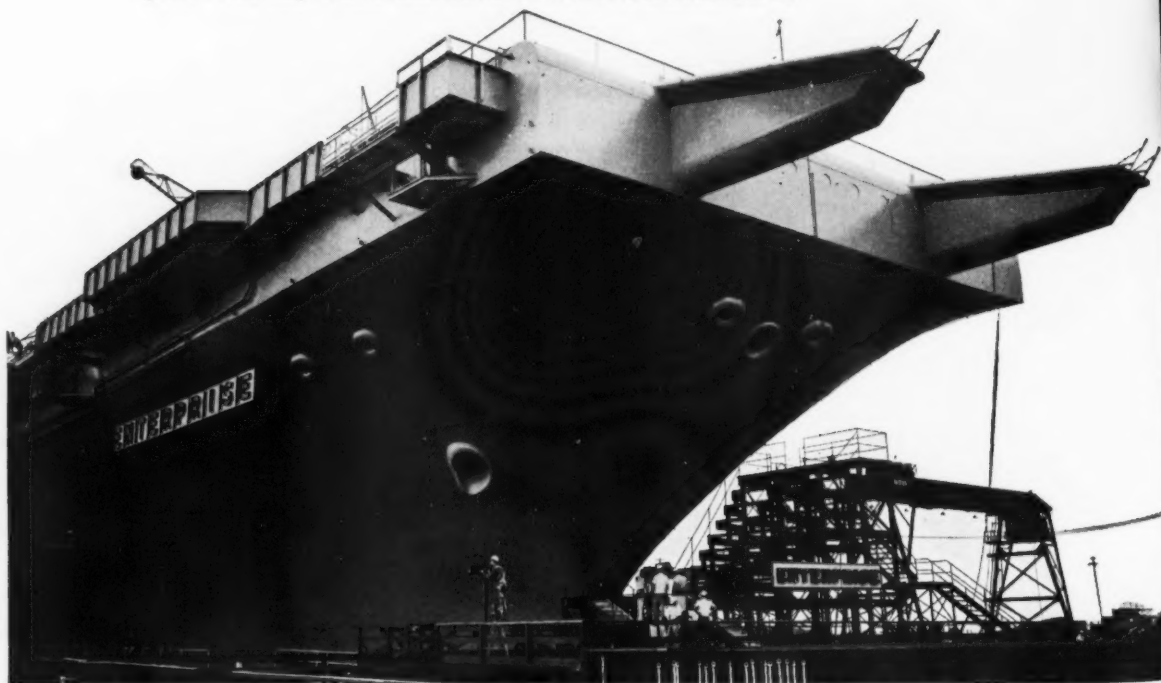
SUPER SAFETY

... for super carrier Enterprise.

A. W. Super Diamond floor plate
keeps footing sure on first nuclear carrier

Safety underfoot on the U.S.S. Enterprise is assured by A.W. Super Diamond floor plate. Built by Newport News Shipbuilding and Dry Dock Co., the Enterprise is truly a super-ship—the world's first atom-powered aircraft carrier... the largest ship afloat... with the most powerful nuclear plant on land or sea... bringing together the greatest amount of electrical and electronic gear ever assembled in such a compact space. And super-safety matched to this super-ship concept is provided by A.W. Super Diamond underfoot!

Specify A.W. Super Diamond for your flooring jobs—it lasts for years... is easy to clean and fabricate. Write for Bulletin SD-86



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WESTERN INDUSTRY/MAY 1961

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How to make your presses most considerate of **MEN, MACHINES** and **MONEY**

It's just a little short of amazing what a difference the right press controls can make. Clark Press Controls, for instance, are designed to guard against every conceivable unsafe condition, while assuring maximum production.

Benefits reported by our customers after standardizing on Clark Press Controls include:

- *Fewer accidents, resulting in lower industrial insurance rates.*
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- *Substantial reduction in costly downtime.*

Today, there are more than 20,000 of our press controls in operation throughout industry. In automotive plants, Clark Press Controls outnumber those of all other manufacturers combined. Good reason to talk to Clark about *your* press control requirements... to call the nearest Clark sales office, or write:

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MAIN PLANT: CLEVELAND, 10 • WESTERN PLANT: LOS ANGELES, 58
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WESTERN MEETINGS

(Continued from page 8)

Three panel sessions were held. Introduction to the symposium was made by Major C. P. Fritsch, Jr., USAF, Air Material Command. Commenting on the conference, Lt. Col. John F. Clyde, Chief, General Engineering Division, Directorate of Advance Research and Development, Air Force Ballistic Missile Division stated: "I was particularly impressed with the wide interest on the part of industry and with the fact that industry is apparently sponsoring much research in filament winding with their own funds."

Maintenance Show Exhibits Reflect Growing Specialization Trend

THE NEED for specialized plant upkeep, theme of the Western Plant Maintenance & Engineering Show at the Los Angeles Pan Pacific Auditorium next July 18-20, grows in direct proportion to the complexity of new equipment, according to a leading Western maintenance engineer.

Speaking from experience in maintaining a multi-million dollar fleet of jet and piston aircraft, George E. Keck, vice president, base maintenance, of United Air Lines, said:

"You might call it a fundamental rule of maintenance that nearly every technical innovation in equipment creates a greater complexity of maintenance problems."

"For instance, the jet airline of today is a much more sophisticated instrument than the piston plane of a decade ago. It requires more and more test equipment, more specialization of maintenance jobs. I think other industries have the same experience with technological advances."

This increasing complexity of upkeep work will be

reflected in the Western Plant Maintenance & Engineering Show and its concurrent technical conference, first of its type since 1957.

Exhibitors and lecturers will deal with many aspects of the modern plant, its insulation, lighting, heating, air quality, furnishings, cleanliness and safety. Other participants will offer products and advice for preventing costly plant breakdowns, for testing equipment, lubricating machinery, repairing breakdowns, standardizing replacement parts, improving efficiency of maintenance crews, etc.

Thousands of Western plant owners, executives, maintenance engineers, production supervisors and designers will attend the Show and Conference.

Saul Poliak, of Clapp & Poliak, Inc., producer of the show, anticipates an attendance easily surpassing that of three past exhibitions, which each attracted more than 6,000 specialized buyers. He attributes increased interest in the show to two factors: The rising tempo of Western States' industrialization, and the shift in emphasis in the West from relatively simple industries to relatively technical ones, requiring greater care in plant maintenance.

Distributor-Representative-Manufacturers' Conference Scheduled by WESCON

ENLARGED SPACE and increased activity both figure in the planning for the Distributor-Representative-Manufacturers' Conference in association with the 1961 Western Electronic Show and Convention in San Francisco this August. The conference is scheduled at the Jack Tar Hotel Monday, August 21, and consists of an all-day program starting with breakfast and concluding with dinner. Morning and afternoon sessions will provide twenty 15-minute periods of table conferences for distributors to meet with manufacturers and their purchasing and sales agents.

According to Alvin Feige, chairman, the enthusiasm for the past conferences has caused WESCON to increase this activity. In past years some of the larger companies were asked for by 40 or 50 distributors and to meet the demand, manufacturers are encouraged to have more than

(Continued on page 14)

Calendar of Western Meetings

May 16-20—PACIFIC COAST ELECTRICAL ASSOCIATION MEETING. Sheraton-Palace Hotel, San Francisco. Pacific Coast Electrical Association.

June 8-9—NEMA WESTERN CONFERENCE. Biltmore Hotel, Los Angeles. Sponsored by National Electrical Manufacturers Association.

June 11-15—SUMMER ANNUAL MEETING OF ASME. Statler Hilton Hotel, Los Angeles. American Society of Mechanical Engineers.

June 1-3—MHEDA NATIONAL CONVENTION. Denver-Hilton Hotel, Denver, Colo. Material Handling Equipment Distributors Association.

June 28-30—INTERNATIONAL TRUCK, TRAILER & EQUIPMENT SHOW, Brooks Hall, San Francisco. California Trucking Associations, Inc.

June 28-30—2nd JOINT AUTOMATIC CONTROL CONFERENCE. University of Colorado, Boulder, Colorado. Sponsored by ISA, AICHE, AIEE, ASME, IRE.

July 4-7—27th ANNUAL MEETING PROFESSIONAL ENGINEERS. Olympic Hotel, Seattle, Washington. National Society of Professional Engineers.

July 18-20—WESTERN PLANT MAINTENANCE & ENGINEERING SHOW. Pan Pacific Auditorium, Los Angeles. Sponsored by Clapp & Poliak, Inc.

Aug. 22-25—1961 WESTERN ELECTRONIC SHOW & CONVENTION. Cow Palace, San Francisco. West Electronic Manufacturers Association.

Aug. 28-Sept. 1—INTERNATIONAL HEAT TRANSFER CONFERENCE. University of Colorado, Boulder, Colorado. Co-hosts are American Society of Mechanical Engineers and American Institute of Chemical Engineers.

Aug. 30-Sept. 1—AIME SEMICONDUCTOR CONFERENCE. Ambassador Hotel, Los Angeles. Sponsored by American Institute of Mining Metallurgical and Petroleum Engineers.

Sept. 5-8—NATIONAL CONFERENCE & INTERNATIONAL DATA PROCESSING EXHIBIT. Statler-Hilton Hotel, Los Angeles, Calif. Sponsored by Association for Computing Machinery.

Sept. 6-8—NEW PRODUCT EXHIBIT & CONFERENCE. Ambassador Hotel, Los Angeles. Sponsored by Los Angeles Chamber of Commerce.

Sept. 13-15—CONVENTION & ANNUAL MEETING PACIFIC COAST GAS ASSOCIATION. Coronado Hotel, Coronado, Calif. Pacific Coast Gas Association.

Oct. 4-6—WESTERN REGIONAL CONFERENCE NACE. Benson Hotel, Portland Ore. Sponsored by National Association of Corrosion Engineers.



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(Continued from page 12)

one team available for simultaneous sessions. Distributors indicating they will attend the conference will be pre-registered and furnished complimentary registrations for the trade exhibitions at San Francisco's Cow Palace August 22-25.

Flying Car Will Be Featured at Truck Show

A SURPRISE FEATURE of the International Truck, Trailer and Equipment Show to be held in San Francisco, June 28, 29 and 30, will be a display and demonstration of the Aeromobile 200 which travels suspended about 12 inches above the ground over any unobstructed surface, land, water, sand or ice. This will be the first public demonstration of the Aeromobile in the San Francisco Bay Area, although it has been previously shown at the Aeronautical Institute of Canada, Princeton University, and at a public demonstration in Chicago. Dr. William Bertelsen, inventor, will demonstrate the unusual product on all three days of the Show which is scheduled for Brooks Exhibit Hall.



SHOWN are two cutaway engines that will be exhibited by Cummins Engine Company at International Truck, Trailer and Equipment Show.

New fuel saving diesel engines and a host of safety products will be prominently displayed at the Show, among them the new HDT Model Diesel by the Ford Division of Ford Motor Company, Ford's first entry into the diesel market. They will also display their Transmatic transmission.

"The Show exhibits will definitely reflect the times," stated Scribner Birlenbach, Chairman, and President of Transcon Lines. "The Show meetings and exhibits are being planned to materially assist the fleet owners and truck line operators in keeping abreast and ahead of important new developments in the trucking industry."

Cummins Engine Company of Columbus, Indiana, in cooperation with its two California distributors, Cummins Service and Sales of Los Angeles and Watson & Meehan of San Francisco, will display the new NH-250 Cummins Diesel Engine. The new model is similar to the NH-220

which is the standard engine on the West Coast but much more powerful, says Cummins.

California legislative activities in regard to safety requirements on trucks are involved in two additional exhibits which will be displayed. Hydro-Aire will show its hytrol line of automotive and industrial products, including the parking application and emergency brake system, the brake pressure protection valve, and the parking application and emergency release valve. Sealco Air Brakes, Inc. is planning an exhibit which will feature a working demonstration panel representative of a complete air brake system for a tractor and trailer.

The exhibits will tie in with meetings that will run currently with the Show on maintenance, safety and other subjects pertinent to the operation of truck fleets.

Prestressed Concrete Institute Is Planning A Fall Convention in Denver

PLANS ARE UNDERWAY in Denver for a fall convention of the Prestressed Concrete Institute which will bring delegates from throughout the nation to events planned in two downtown hotels.

Convention Chairman Jack Perlmutter, of Denver, said the Denver Convention of PCI will be co-sponsored by the Institute and the University of Colorado.

More than 450 delegates and their wives and guests will meet from October 14 through 19 in the Brown Palace and the Cosmopolitan Hotels. Also in attendance will be architects and engineers to bring the attendance close to the 1,000 mark.

Perlmutter said his convention committee has been at work for months arranging meetings on new products, unusual design and research and development in the prestressed concrete industry.

Outstanding speakers from throughout the nation will be on hand to offer presentations and papers on major advances in prestressing.

Working with Perlmutter on his convention committee are Prof. Roland Rautenstrauss, chairman of the University of Colorado Department of Civil Engineering and Dr. James Chinn, Professor of Engineering.

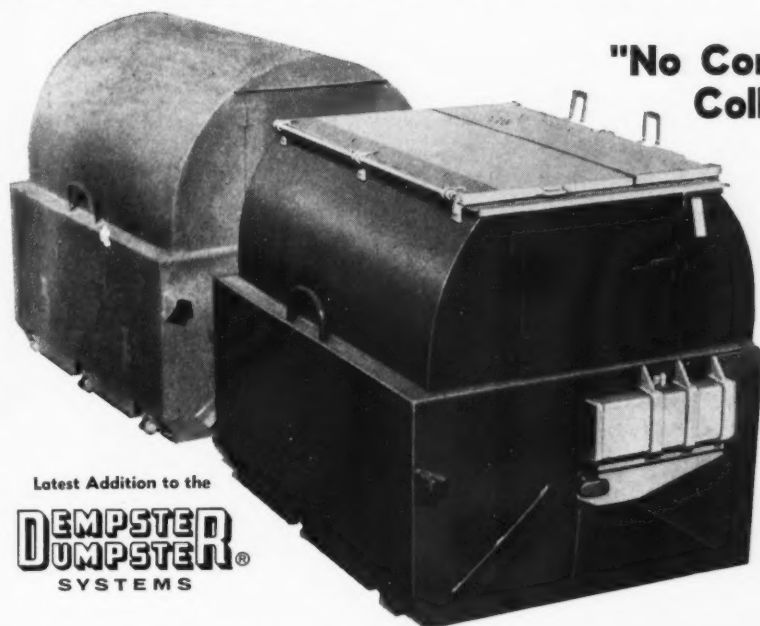
Others on the committee are George Hanson, Joe Bullen, Don Johnson, Warren Marshall, I. C. Peterson, Robert Koons, Irvin Rasmusson, Allen Brown, Jack Hiatt and Harvey A. Kadish.

Automatic Control Conference in Denver Expects an Attendance of 1000

RECENT ADVANCES in automatic control will be discussed at the Second Joint Automatic Control Conference, June 28 - 30, 1961 at the University of Colorado, Boulder, Colorado. To assure comprehensive coverage of significant progress five leading societies have provided active sponsorship and programing support — AICHE, AIEE, ASME, IRE and ISA.

Attendance of 1,000 control engineers and scientists from the United States and Canada is expected to fill the housing facilities at Boulder. Advance registration and reservation forms for housing and social functions are available from the Meetings Manager, ISA, 313 Sixth Avenue, Pittsburgh 22, Pennsylvania.

New SUPER DUMPMASTER Handles Converted DUMPSTER Containers...Beats Long-Haul Problem



Latest Addition to the

DUMPSTER
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Owners of DEMPSTER-DUMPMSTER Systems who now face long haul problems due to movement of disposal areas may now convert from their present "container haul" system to the new SUPER DUMPMASTER "no-container-haul" system without abandoning their investment in DUMPSTER Containers.

The SUPER DUMPMASTER makes its rounds to each converted container, mechanically empties the contents into its 30 cu. yd. packer body and compacts the material to a fraction of its former volume with the 85,000 lb. force of its packer plate. Rather than haul each container to the disposal area, the SUPER DUMPMASTER carries the contents of many containers on each trip, cutting collection costs drastically.

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"No Container Haul System" Collects Refuse on Spot

If longer trips to disposal areas have raised your operating costs, a small investment in conversion kits protects large investments in DUMPSTER containers. The Super DUMPMASTER handles converted DUMPSTER containers up to 12 cu. yd. and all DUMPMASTER containers one thru 12 cu. yd.



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The SUPER DUMPMASTER engages container.



Clearance arms carry it toward hopper opening.



Container is rotated, emptying contents into the compaction body.

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says Ellsworth W. Somers, Assistant Secretary of Somers Brass Co., Inc., Waterbury, Connecticut.

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WESTERN INDUSTRY/MAY 1961

... for more details, adv. opp. pg., circle No. 13 on Reader Service Postcard

AGAIN-



Shown here is the 6"

Rapidation

Dolphin Submersible Pump, one of a complete line of 4" and 6" pumps made by THE TAIT MANUFACTURING COMPANY, Dayton, Ohio. Arrow points to the upper body shell made of Revere seamless leaded brass tubing. Hand holds the diffuser casing made of Revere Brass Strip and used inside pump.

Revere helps "fit the metal to the job"

**AND A PUMP MANUFACTURER FABRICATES
SUPERIOR PARTS WITH GREATER EASE... INCREASES TOOL LIFE**

An important part of the submersible pumps made by Tait Manufacturing Company is the brass diffuser casing you see above. This part had formerly been made of ferrous metal. While satisfactory as a pump part it was difficult to work and draw... at the same time tool life was short.

One of Revere's Technical Advisors was asked to study the problem. Revere Cartridge Brass Strip of a certain temper was recommended, samples submitted, and, after extensive tests, was approved. The customer has found that not only does the diffuser casing, made of Revere Brass, perform well in the pump, but it also has superior drawing properties, is more easily worked, and tool life has been substantially increased.

This meticulous attention to "fitting the metal to the job" also resulted in Tait Manufacturing Company's specifying Revere seamless leaded brass tubing for the upper body shell of its submersible pumps. Here the application called for extremely close straightness and roundness control which meant special attention to detail on the part of the Revere mills.

Why not put the extensive knowledge of Revere's T.A. Service to work for you? With the wide variety of metals at your disposal, perhaps Revere can help you select the one best suited for the job, with a resultant saving of money while improving product quality.



REVERE COPPER AND BRASS INCORPORATED

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CF&I **BLACK SATIN**

OIL TEMPERED WIRE FINISH

Black Satin—a unique finish on Round Oil Tempered Wire—is another result of CF&I's never-ending search for better and better steel products. Now made in our South San Francisco Mill for prompt delivery to western customers, this powdery oxide finish is produced by tempering wire under electronically-controlled atmospheric conditions. Black Satin serves as a lubricant in coiling and crimping operations, and offers wire-users these outstanding advantages:

1 Black Satin finish will not "flake off" in surface scales—a problem with ordinary Oil Tempered Wire finishes that require constant adjustment of the initial setup and result in costly machine downtime. And, Black Satin is highly uniform from one end of the coil to the other, from coil to coil and from lot to lot. Because your equipment does not have to be altered to cope with varying physical properties of the wire, you minimize initial setup time . . . increase your output per shift . . . reduce scrap losses on long runs . . . and receive uniform end products. "Stop-and-go" operations are almost nil when new coils are started.

2 Black Satin lengthens your production runs, because CF&I can supply you with this top quality Oil Tempered Wire in continuous unwelded lengths up to 600 pounds in weight. These large coils minimize the rethreading time required by smaller coils. Black Satin is available in a full range of gages and sizes and in coils from 16" to 72" in diameter. Straightened and cut lengths from 6" to 24' (or longer) can also be supplied.

3 Black Satin is color-tagged for ease in handling. To assure uniformity of quality from coil to coil, CF&I color-tags every coil of Black Satin for a reliable record of its processing, testing and intended use. To reorder your particular type of Black Satin, you merely return the appropriate tag to us. This tagging system simplifies your inventory control, in-plant storage and materials handling. These tags, three of which are illustrated here, show:

Heat Number _____
Tensile Strength _____
Date _____
Coil Number _____
Test Sheet Number _____



Oil Tempered Wire is only one of the many types of quality specialty wire produced by CF&I. Each is packaged for your production: on returnable "spiders" holding a continuous length of wire weighing from 2000 to 4000 lbs.; on non-returnable "spiders" of 500 to 700 lbs. capacity; in fibre-drum holding up to 600 lbs. of wire; in steel-strapped or wire-tied coils from 200 to 2000 lbs.; and in bare or paper-wrapped coils, or in 500- to 800-lb. reels.

This outstanding diversity of product and packaging is another reason why it pays to make CF&I your source of supply for all types of wire. Contact your nearest CF&I representative for complete details.



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8110-A

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WESTERN INDUSTRY/MAY 1961

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Photo courtesy Maas-Hansen Steel Co., Los Angeles, California

FOR EVERY APPLICATION, THERE'S ONE CRANE OUTSTANDING... P&H!

This low-cost, 10-ton floor-controlled P&H overhead crane is a production tool tailored to meet the multiple handling needs of this steel service center. Equipped with interchangeable coil and sheet steel grabs, as well as a hook scale, it warehouses the steel, services the shear, and loads shipments in a manner impossible to match with surface-bound equipment. Aisleways are reduced to an absolute mini-

mum; valuable floor space is made to pay for itself.

Before you draw up your next crane specification, get the help of your local P&H man. He's backed by the largest group of engineers in the crane industry... and 76 years of experience in crane building. Then send your next crane inquiry where *most* smart buyers do — to Harnischfeger, world's largest builder of overhead cranes!



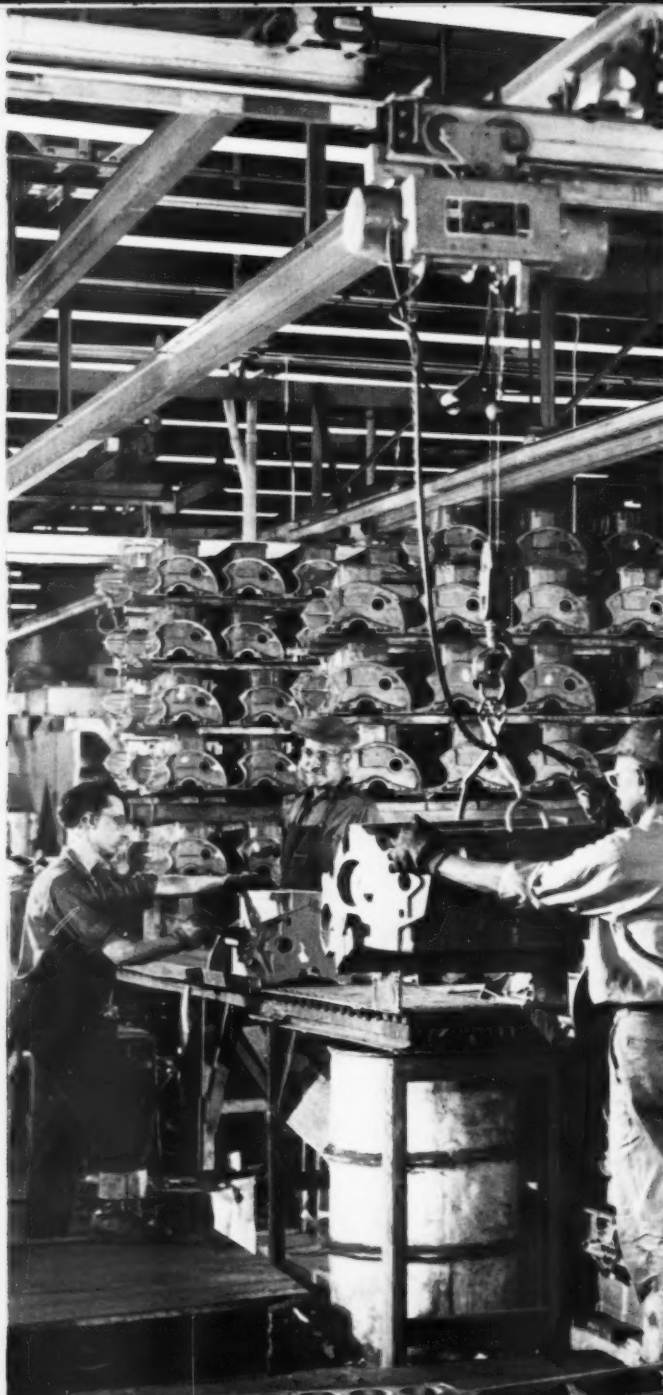
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P&H
OVERHEAD
CRANES



This P&H floor control station for overhead cranes puts easy pushbutton load handling under the operator's thumb. Depending upon service and load requirements, P&H floor-controlled cranes offer you a choice of single-, two-, or variable-speed control. Where needed, a skeleton cab can also be provided for overhead operation, and the pendant lowered to floor for intermittent use.



ENGINE BLOCK 3:

HOIST 'EM FAST, HANDLE 'EM SAFELY!

These P&H Zip-Lifts play a vital role in the production setup for this modern automobile engine plant. They keep the ever-hungry transfer machines fed with a steady flow of engine blocks. In this production area, for example, P&H Zip-Lifts make up to 100 or more lifts an hour . . . throughout the day, day-in, day-out!

These heavy castings must be handled both quickly and safely. That's why P&H Zip-Lifts are on the job — they are the safest hoists in their class, and (like the name says) they've got plenty of zip.

Isn't worry-free dependability and fast handling like this just as important in your operation? Find out more about the quality design features of P&H hoists. Surprisingly, real quality like this is priced unusually low, starting around \$200. Call your nearest P&H Distributor — or write for Zip-Lift Bulletin H-20, Department 230, Harnischfeger Corporation, Milwaukee 46, Wisconsin.

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P&H

ELECTRIC
HOISTS

See your Yellow Pages under "Hoists"



Photo courtesy Chrysler Corporation,
Detroit, Michigan.



ARRAY OF PHOTO MILLED parts shows items with tiny holes, gridwork and delicate webbing. Upper left hand corner is sheet of springs milled from magnetic material. Many of parts shown are so intricate no dies could be made to produce them. Note sheets of parts, right, held intact by series of tie bars.



PHOTO MILLING for thin close tolerance parts

Manufacturing method similar to photoengraving is economical way to do intricate close tolerance work on thin metal stock.

QUANTITY BLANKING of high precision parts made from thin stainless, Beryllium copper, ferrous, magnetic and precious metals is being accomplished in the West by a photo milling process that offers burr-free parts at a fraction of the cost of methods using conventional tooling and punch presses.

Newly installed at Industrial Electronic Engineers, a North Hollywood, Calif. manufacturer of automatic electronic control systems and in-line digital displays, is a photo milling operation in which ultra thin parts are being chemically etched to tolerances as close as .0002-in.

Some of these tiny parts, including contact blades,

terminals and flush type commutators, may be as thin as .003-in. and could not be produced on punch press dies without tearing or altering the shape of the part or changing the characteristics of the metal.

Since the process requires no mechanical tooling it is of great value in prototype work. Last minute design changes can be included at low cost and the most sophisticated part can be produced with "tooling" costs somewhere in the \$100.00 area.

Basically photo milling is a close relative to photo engraving in that a photographic image is transferred to a photo-sensitive metal surface that in turn is chemically etched.

To insure extreme accuracy of parts that may



METAL SHEET with negatives attached is being placed in vacuum frame for exposure, right. Man, center, is trimming coiled stock prior to coating with emulsion.

have a myriad of tiny holes, gridwork or delicate webbing, a drawing is made many times the size of the finished component. This drawing is photo copied by a carefully focused camera and reduced in steps to the exact size of the finished part. The resulting negative is carefully checked for accuracy. Pinholes or other faults are corrected by retouching.

The negative is then reproduced in quantities needed for the production run. Two negatives, one on each side of the metal sheet, are needed to produce the part. Dual negatives aid in holding the accuracy of the part by controlling the placement of an emulsion that will inhibit undercutting during the etching.

The proper metal for the part is selected, thoroughly cleaned and coated with a photosensitive emulsion that is resistant to the etchant. The negatives are applied to both sides of the coated metal sheet which is placed in a vacuum frame and exposed.

Where light is admitted through the negative, the emulsion is dissipated and this allows the iron

chloride or other etchant to reach and mill the part. Literally hundreds of tiny parts can be produced at one time. They are removed from the etching tank in sheet form and can be broken into separate parts for assembly by carefully severing tiny tie bars that hold them into the sheet.

Parts such as flush type commutators are attached to sheets of epoxy and after chemical etching are cut into separate units by a specially fixtured lathe. Etching parts to the proper tolerance is a matter of exposure time and temperature of the tank. A basic rule of thumb on tolerances that can be held depends on metal thickness. Parts .001-in. thick, $\pm .0002$; .003-in. thick, $\pm .0005$; .005-in. thick, $\pm .001$; .010 thick, $\pm .005$; and .015-in. thick, $\pm .010$.

According to John E. Hendricks, general manager, a basic production staff of not much more than five people can run a complete photo milling operation. In addition to low tooling costs, he indicated that prototype parts can be produced in one day.



A ROOM THAT IS ACTUALLY the inside of a large camera is shown here. Sealed and darkened room serves as the camera box. Huge bellows of camera is in other room. Operator adjusts picture of part, many times actual size, on copy board. Shutter can be tripped from either room.



NEGATIVES OF PARTS are carefully checked for pinholes or other tiny flaws that might produce inaccuracies. Negatives are retouched in this room. Note negative for sheet of parts above operator's head, left.

➡
FORK TRUCK OPERATOR positions 1800 pound load with purifier-equipped fork truck. OCM units similar to one pictured are adaptable to wide range of in-plant equipment including power sweepers.

EXHAUST PURIFIER for in-plant vehicles

Gasoline powered vehicles are ideal choice for many indoor jobs but often not used because of fumes. Here is where vehicles with exhaust purifiers can save money.

IT'S WELL KNOWN that fumes from an internal combustion engine are hazardous when exhausted into an inclosed area, but even where no actual threat of carbon monoxide poisoning is present, active exhaust fumes from LP-gas, gasoline or diesel equipment can cause headache, eye irritation, and nausea that affects plant employee productivity, morale, even health.

With emphasis being placed on industrial air pollution in the West by control agencies, city and state health departments, safety engineers are giving increased attention to in-plant vehicles and are finding that they can use this equipment without danger to employees if the regular acoustical muffler is replaced with a catalytic exhaust purifier.

This type of device is designed to drag out harmful monoxides, hydrocarbons, and irritants from exhaust by oxidizing them to harmless carbon dioxide and water vapor. This widens application of gasoline-powered equipment and is allowing their use, for example, in food processing industries for areas such as cold storage rooms where they were once impractical.

In other material handling operations, buildings have been designed or were ideally suited to gas-powered fork truck use but ventilation problems prohibited their use.

Oxy-Catalyst Inc. has developed an exhaust purifier suited to fork trucks and other in-plant material



handling equipment that has brought levels of monoxide concentration down from 1000 ppm to less than 25 ppm, well within limits of most codes.

Purifying elements are made from ceramic porcelain sticks and frames impregnated with a catalytic agent. These are encased in a pressed steel muffler. Catalyst begins to function at about 500 degrees F. and continues to purify until engine shutoff.

Involved in material handling operations at Hillbro Co., Los Angeles, are rolls of bulk paper weighing 1800-2000 pounds carried by a fleet of gasoline-powered fork trucks operating in a storage bay with a minimum of air flow.

According to R. W. Meinburg, department manager, the configuration of the 28-ft. ceiling was such that exhaust gases were trapped and raised monoxide levels above that required by the city health department.

OCM catalytic exhaust systems were installed on a number of fork truck makes and have been efficient between 2500 and 3000 engine hours. Monoxide concentrations as well as other irritants have been lowered to safe levels with marked employee moral boosts, Meinburg said. Units are effective at idling speeds and under full load.

Purifiers, in general, are comparable in size to original acoustical mufflers and are installed at a rate of one catalytic section to each 35 cu. in. of piston displacement.

➡
PURIFIER INSTALLED on 2000 pound-capacity Clark fork truck is OCM model C4-91A, designed to fit space occupied by original acoustical muffler. Purification begins when exhaust reaches 500 degrees F. and is effective at all engine speeds.



Another firm, American Metal Products, Los Angeles, was using gas-powered fork trucks in handling aluminum sheet on skids, moving dies, tote boxes, stacks and pallets holding semi-fabricated metal parts. Gas-powered equipment was ideal for weight loads, storage methods and length of runs but while material handling conditions improved, employee morale slumped.

Coughing, nausea, smarting eyes and headaches were causing lost man-hours. After a test program on one of four in-plant fork trucks complaints stopped coming from operators and workers stationed near this material handling operation. The entire fleet was then OCM equipped.

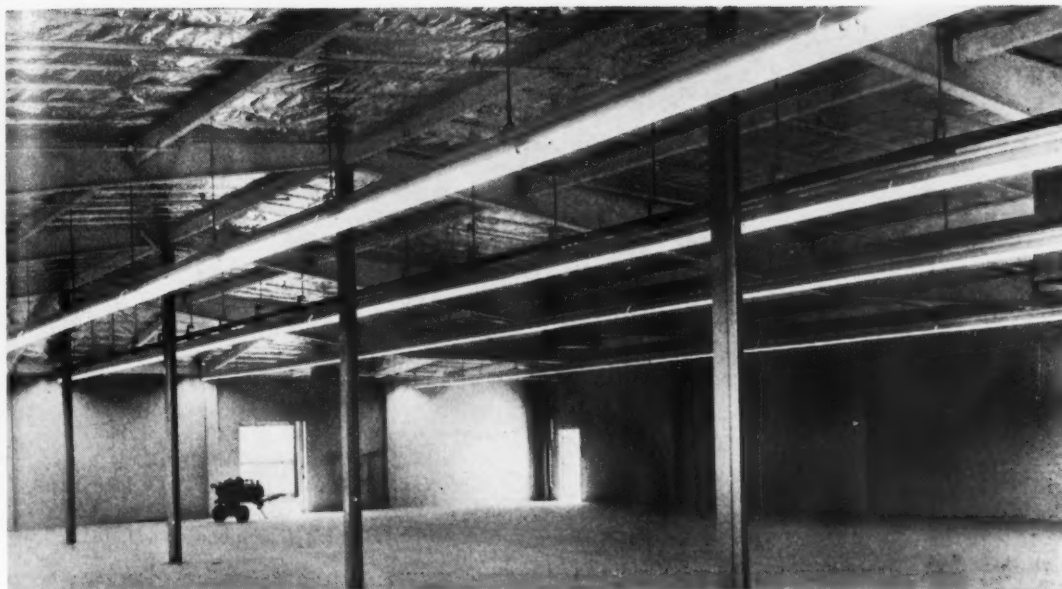
For most gasoline-powered material handling

equipment, key to successful catalytic purification is the switch from leaded to non-leaded gas. Before installation of the unit, engines and fuel systems must be delead. This includes crankcase flushing, washing of the engine fuel system with white gas, draining of fuel pumps, lines and storage tanks. A 75 hour run on non-leaded gas is recommended prior to purifier installation.

Purifiers are available for 4-cycle diesel engines in all sizes, for non-leaded and LP-gas fired engines up to 570 cu. in. displacement. If leaded gasoline must be used a purifier operational for up to 600 hours is adaptable to engines as large as 230 cu. in. displacement. When LP-gas is used, purifier life may be extended up to 4000 hours.

➡
TYPICAL CATALYTIC PURIFIER for fork truck installation is this Oxy-Catalyst unit held by Sid Chase, OCM sales engineer. Device is designed to eliminate about 95% of monoxides, 80% of hydrocarbons, smoke and irritating aldehydes.





VIEW OF NEW PLANT ADDITION shows how aluminum foil-backed insulation is used as finished ceiling to save costs. Note how reflectivity of aluminum increases light inside building. Firm has realized 25% improvement in floor level lighting.

FOIL INSULATION cuts plant expansion costs

Electronics firm uses aluminum foil-backed insulation as ceiling to slash plant construction costs, improve lighting with no added expense.

PLANT EXPANSION requires a considerable outlay of money. This can be of major importance to many small Western manufacturing firms who are expanding rapidly. Not only must the plant manufacturing space be increased but money must be found to take care of hiring additional personnel and acquiring production equipment. As a result economical building methods that will reduce costs and at the same time provide a satisfactory manufacturing environment are particularly advantageous.

One Western electronics company, Barton Instrument Corporation, Monterey Park, California, has successfully reduced its building costs by making a ceiling with aluminum foil-backed insulation. Besides eliminating the cost of a standard finished ceiling, the installation has substantially improved plant lighting, an important consideration in manufacturing and assembling electronic components. The firm also expects to save in maintenance costs by eliminating the need

for repainting the ceiling.

When this company outgrew its facilities and needed 26,000 additional square feet of manufacturing space, it shopped around for the most economical methods and materials. On the recommendation of Barton's contractor, aluminum foil-backed insulation was used. The material saved 50% of ordinary installation cost since it could be stapled directly to the roof joists of the exposed ceiling, eliminating the need for a covered ceiling or supporting material that is required for many types of insulation. This method of installation saved about one-third of the cost of the over-all finishing of the ceiling area.

Alfol Type 4, a product of Reflectal Corporation, subsidiary of Borg-Warner Corp., consists of three foil sheets with the bottom sheet laminated to kraft-and-duplex backing. It was stapled directly to the underside of the 2-in. x 10-in. roof joists with an air-operated stapling machine. To fasten the 24-in. wide



FRANK FICHER, field superintendent, California Insulation Contractors, subcontractors who installed the insulation, examines stapling of panels to roof joists and cross beams prior to checking out the building.

foil blankets to the joists, staples were driven every six inches along one edge and the expanded blanket was stretched to the next joist where the free edge was stapled in the same manner.

This solved the problem of possible contamination, since no dust or fine particles can sift through to the manufacturing area to contaminate the instruments. The aluminum sheet also provided a proper diffusion of light necessary in the manufacture of precision instruments, and increased floor level lighting by 25% at no extra cost to the company.

A major problem in the construction of any building in California is heat gain from almost daily exposure from the sun. Aluminum foil insulation has an ability to reflect 95% of the radiant heat. Air spaces between the insulation block convection, or heat carried by currents of air, and since the thin sheets of aluminum and paper give the insulation a density slightly heavier than air, it resists heat gain by conduction. These factors contribute to a reduced drain on the air conditioning system and provide better temperature control.

The Barton Instrument Corporation addition required 20,000 sq. ft. of insulation, 14,000 sq. ft. exposed and 6,000 sq. ft. covered in the attic space.

CORD STRAPPING, a new packaging material

Rayon strapping is finding its way into industrial packaging. Here is an excellent application of its use.

SAFER SHIPPING and easier handling of steel oil pails and containers have resulted from the use of rayon strapping by Steel Container Corporation, Tacoma, Wash.

The firm manufactures plain or multi-color decorated containers of cold rolled steel for leading West Coast oil, chemical, and paint firms. It uses cold rolled steel, from 28 to 16 gage with container sizes ranging from 2 to 62 gallons. Steel Container Corporation recently tried an industrial rayon packaging material called Avistrap, made by the Industrial Packaging Department, American Viscose Corporation, for unit shipments of 27 oil pails of 5-gal. capacity to a major oil company. The firm found that it could successfully use $\frac{3}{8}$ -in. Avistrap (Type 30) on each unit. Three straps are sealed around the palletized pails, which are framed top and bottom with a corrugated tray.

A primary advantage of this type of strapping in addition to being easy to handle and a safe material, is that it does not damage the pails, which are silk-screened or lithographed in several bright colors with brand names and other copy. Furthermore, rayon strapping does not cut into or otherwise damage the trays.

Each pallet of oil pails weighs 108 lbs., and is shipped 1,500 miles or more to all parts of the Far West. Steel Container does its silk screening, but lithographed containers come flat and, like the silk-screened containers, are formed in the Tacoma, Wash., plant.

Easy to mount and requiring little storage space, the strapping can be disposed of simply after a shipment has been received. In addition, it can be cut with scissors or a penknife.



THREE RAYON straps secure this 108-lb. package for trips up to 1500 miles or more. Cord strapping has advantage here in that it cannot damage lithographing on can.



MATERIAL HANDLING section chairman Andrew Briggs introduces panelists from left, W. B. Semco, R. D. Wood, R. F. Mollner, and Wally Brucks, who covered safety concepts involved in handling operations in manufacturing, warehousing, trucking and rail transport.

WESTERN SAFETY CONFERENCE presents new ideas and products

Highlight of conference was panel of experts, who covered concepts of safety in material handling operations.

DESPITE DETERMINED EFFORTS of industry through vigorous safety programs, industrial accidents contributed strongly to the 93,000 death toll last year, a figure that includes 2,000 more accidental deaths than in the previous twelve months.

These sobering statistics greeted industrial conferees to the 8th Annual Western Safety Congress and Exhibits in Los Angeles who participated in many of the 75 technical sessions and who visited a 118-display exhibition.

Again this year the sponsoring National Safety Council placed heavy emphasis on indoctrination of industrial supervisory personnel with a "Safety Techniques for Supervisors" program that ran throughout the 3-day meeting. Goals of this activity include involvement of a maximum number of employees in organized safety plans, systems for keeping employees alerted to common hazards, informing supervisors of accident insurance coverage and importance of plant housekeeping to safety.

A highlight of the industrial program was the material handling section held under sponsorship of the Los Angeles Chapter, American Material Handling Society. Section co-chairmen were T. W. Brown, Exide Storage Battery, and Warren Burman, Hyster Co. Panel moderator Andrew Briggs joined W. B. Semco, Semco and Asc., and Wally Brucks, Hunt Foods and Industries, in material handling safety discussions.

Opening with a statement that the small plant without mechanical handling equipment offers the greatest hazard to the worker and the material or product he handles, W. B. Semco, pointed to statistics that show high injury rates for handling operations after material comes off the assembly line. A case in point was Semco's description of an automated mirror factory in Los Angeles that reported no injury to workers until the product was lifted by hand from the final processing machine and placed in shipping containers.

At this point injury rates skyrocketed. He offered a two fold suggestion; minimized intimate contact of workers with material by using any device no matter how basic, and a program that instills respect for the dangerous qualities of an apparently harmless product.

Turning to the factor of increased speed in material handling made necessary by high labor costs, panelist Wally Brucks pointed to rising accident figures in material handling that are approaching 3.50 disabling accidents per million man hours.

Important contributor to this accident area has been misuse of fork trucks in tight in-plant areas that utilize rapid high stacking procedures to fill maximum cubic area. When heavily loaded pallets are lifted in excess of 12-ft., danger factors multiply, Brucks indicated. Needed to perform this work is a cool headed, well trained operator who can do high



STRIPPING COMPOUND used in removing wax from plant floors is held in commercial-sized container by Columbia Wax representative Paul Patterson. Firm markets anti-slip floor products.



WAVING FROM PLATFORM of hydraulically operated staging device, model demonstrates device used for wide range of overhead maintenance work and distributed by Michael Chance and Associates.

stacking with safety by overcoming such hazards as whip in the fork truck mast, lack of visibility, too rapid a lift speed and excessive controls on his truck.

Describing vehicles with sophisticated controls for numerous maneuvers and functions, Brucks said humorously that it would take an octopus to efficiently operate them. He called for fewer controls, increased wheel base for stability in trucks used for high stacking, closed circuit TV on the mast for driver visibility in high places, and variable lift speeds that would

allow pallets to rise more slowly at higher elevations.

Brucks returned to in-plant housekeeping. He said that small-sized litter dropped on top of palletized goods is many times un-noticed by the fork truck operator prior to a high stacking operation. A hammer shaken from atop a pallet at 16-ft. can cause a fatal head injury. To bolster an anti-litter campaign, Brucks suggested wearing of head gear, hard hats and protective face shields that would still offer high visibility.



SAVING EYESIGHT is the purpose of this Haws eyewash fountain designed to rapidly flood irritants from workers' eyes. Unit is actuated by a foot pedal and is demonstrated by J. E. Traynor, Haws president.



INDUSTRIAL MAINTENANCE EQUIPMENT including explosion-proof vacuums, scrubbers, polishers and pickup devices were demonstrated by Hild representative Jack Farrell.

STANDARD ENGINEER'S REPORT



Production time cut in half on 20-foot bolt threading job

Payne's Bolt Works Company, San Francisco, solved a tough machining problem and made real time savings by switching to Chevron Cutting Oil 33DA.

Previous experience with a soluble oil indicated at least *two cuts* were necessary to get good finish on 11 feet of thread for these huge twenty-foot bolts. Instead, by using Chevron 33DA, superintendent Ray Randall found threads could be cut on heat-treated 4140 alloy steel in *one operation* . . . without sharpening chasers.

"The superior lubricating and coolant qualities of Chevron Cutting Oil permitted chasers to make smooth even cuts right down to the last thread. This meant a savings of more than two hours production time on each bolt. And we still had a better quality thread," reports Mr. Randall.

Equipment note: The Landis threading machine used on these mammoth bolts can cut up to 4" stock and was the key machine in turning out replacement tie-bolts for the world famous

San Francisco-Oakland Bay bridge.

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NEW OIL TEMPERED SPRING WIRE unit at CF&I South San Francisco plant. Wire is placed on pay off reels at far end. Seen in photo are 60-ft. hardening furnace, oil quench and lead drawing furnace (both hooded) and take up block on which finished wire is coiled.

UNIQUE NEW UNIT produces oil tempered spring wire

First installation of its kind in the West, the unit is designed to be flexible. It can handle wire from .041-in. to $\frac{5}{8}$ -in.

A UNIQUE NEW INSTALLATION is producing oil tempered spring wire in a complete range of sizes from 19 gauge (.041-in.) to $\frac{5}{8}$ -in. at Colorado Fuel & Iron's South San Francisco plant. Not only is this the first installation of its kind in the West but the unit is unique in that it can oil temper a range of wire sizes that elsewhere has required the construction of at least two and often more separate units. As such, its development represents a significant advance metallurgically.

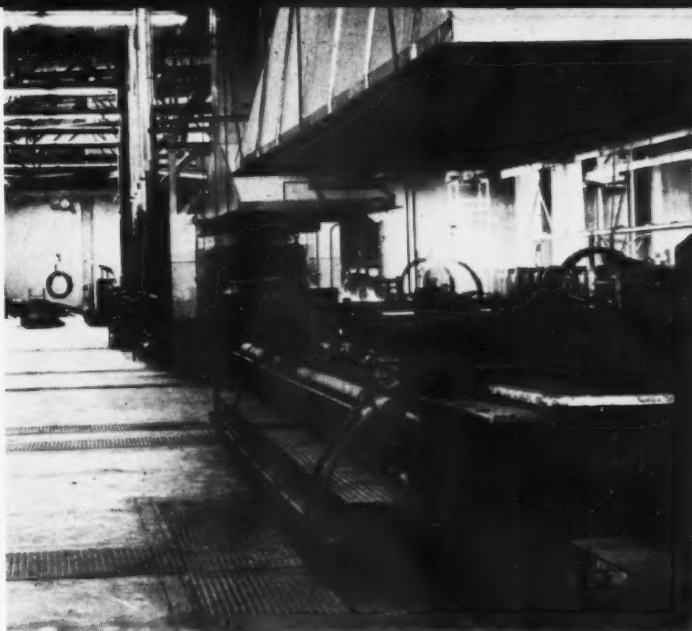
The unit is composed of 12 free spinning pay-off reels, on which coils of selected high carbon steel wire, with carbon content from .063% to .065%, are placed. The wire is then drawn through the atmosphere controlled furnace. This furnace hardens and at the same time imparts a controllable iron oxide coating on the wire. On leaving the furnace, it passes through an oil quench, a tempering medium that sets the hardening. In doing so, the wire is never



AFTER TYING FINISHED WIRE worker slides it off take up spindle into pit. The wire will then be removed with an electric hoist. Spindle is free to receive another roll.



CLOSE VIEW of lead drawing furnace that restores hardened spring wire to desired ductility. Also seen in background is oil quench and atmosphere controlled hardening furnace.



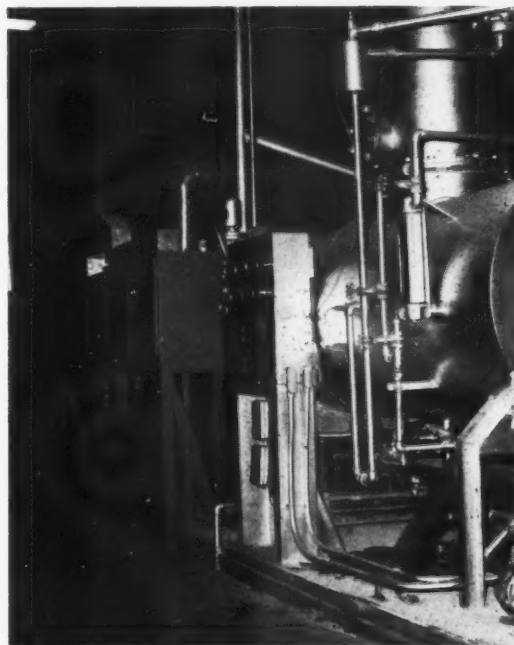
exposed to the outside temperature. It passes on to a lead drawing furnace that restores the wire to the desired ductility. On leaving the lead furnace, the wire enters a water cooler. It then receives a light oiling by running over sheaves partially placed in an oil bath. The finished wire is coiled on the take-up block.

The power supply that drives the take-up block is a 15 horsepower direct current Reliance motor, with a Reliance variable speed drive. The block contains 12 spindle take-ups for coils ranging from 16-in. through 72-in. in diameter. Spindles control the speed of the wire as it passes through the various processes. Since wire sizes vary, it is imperative that spindle speeds be carefully controlled. Small wire sizes require less hardening time than large sizes. They also require less drawing time.

The key to this installation and the item that makes it unique is a radiant tube atmosphere controlled furnace, 60-ft. long, with a 4-ft. hearth opening built by Heat & Control, Inc., San Francisco. The furnace has been designed so that both atmosphere ratio and temperature can be controlled precisely and can be varied to compensate for different sizes of wire. With these variables, the correct hardening temperature can be achieved and the precise amount of iron oxide coating imparted to a wide range of wire sizes.

The furnace's basic atmosphere is nitrogen, which is supplied by a nitrogen generator. This generator both manufactures and dries the nitrogen. After the electronic controls are set to provide a certain nitrogen ratio in the furnace, the process is completely automatic. By varying the nitrogen ratio in the furnace, its atmosphere can be accurately controlled. This is important in that it determines the amount of iron oxide coating the wire receives. The temperature in the furnace may also be accurately controlled. These two variables along with a third variable, the ability to accurately vary the speed with which the wire is pulled through, provide the installation with its needed flexibility, and allow it to process wire from .041-in. to $\frac{5}{8}$ -in. in diameter.

Prior to this installation, the usual method of processing oil tempered spring wire has been to use additional units with lead baths for hardening the finer sizes of wire. This was considered necessary to impart the correct amount of iron oxide coating to the wire. Other types of furnace tend to place too heavy a coating on fine wire. The variable nitrogen atmosphere in the CF&I installation solved this problem for all sizes.



KEY TO VERSATILITY of unit is atmosphere controlled furnace. Shown here is nitrogen generator and automatic control system, which automatically make nitrogen used in furnace and adjust furnace's atmosphere to the set desired ratio.

Thus, CF&I by achieving the needed variable accuracies in atmosphere control, furnace temperature, and pull-through speed, has increased its production flexibility, and at the same time saved the cost of installing one more and possibly several additional oil tempering units.

DUAL BENEFIT from dust collector system

System solves air pollution problem for plant near residential area and at same time improves in-plant working conditions.

TYPICAL OF FIRMS faced with an air pollution problem that might cause complaints from a nearby residential area is Dayton Foundry, located in suburban Hollydale, near Los Angeles.

In order to prevent escape of smoke and fumes from foundry buildings Dayton installed a Western Precipitation Dualaire bag-type dust collector.

Directly over a squeezer shake out, that breaks sand molds from castings, a large intake air duct was installed to pick up fumes and fines. A large fan creates a vacuum that carries the smoke and dust through an enclosed conduit to the Dualaire filtering device outside the building. Exhaust air is 99.99% pure after leaving the filter, according to Dave Perlis, Western Precipitation product manager.

The unit contains fine, felt filtering elements that are cleaned by a reverse jet of air forced through blow rings that move up and down the length of the filter tubes. The felt filter is cleared and restored to its original porosity. Dust is sent to hoppers at the bottom of the tubes.

There is no bag shaking or vibration to wear out bags. Filters are permanent and maintenance is kept at a minimum.

Over and above complying with Air Pollution Control District regulations, Mel Hartman, Dayton plant engineer states the system has improved in-plant working conditions. Employee response has been enthusiastic toward cleaner air and cooler foundry temperature created by the fan system.

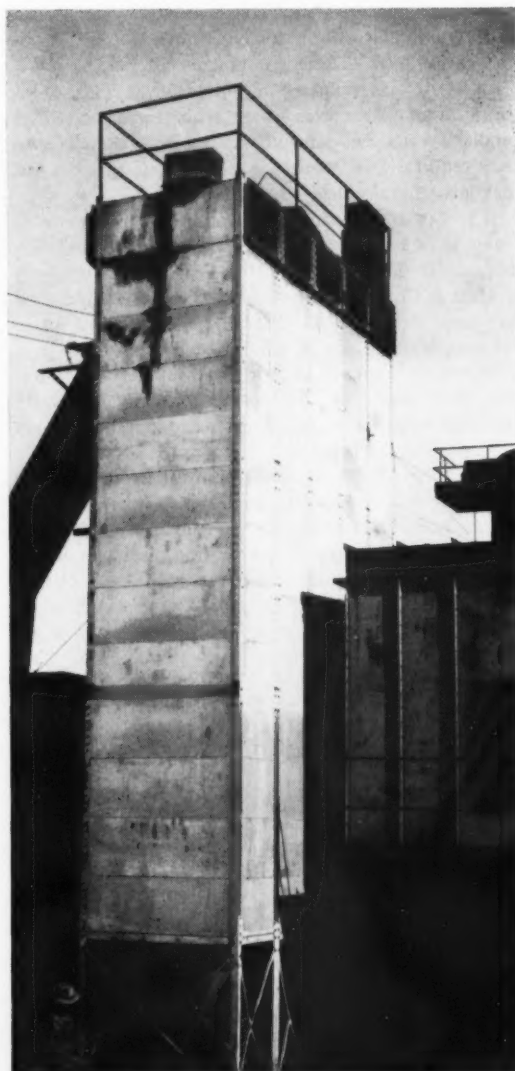
Heat had been a problem for worker comfort since most castings arrive at the shake-out phase in a smoldering condition. A special intake tube leads into the pit under the shaker system and captures smoke, dust and heat that accompanies hot sand as it falls through the shaker.

The system operates at 15,000 cfm and averages 6 to 8 hours a day of continuous service.

Operation of the blow ring and cleaning jet on the Dualaire is controlled automatically by a pressure switch. Restored filter porosity makes possible a

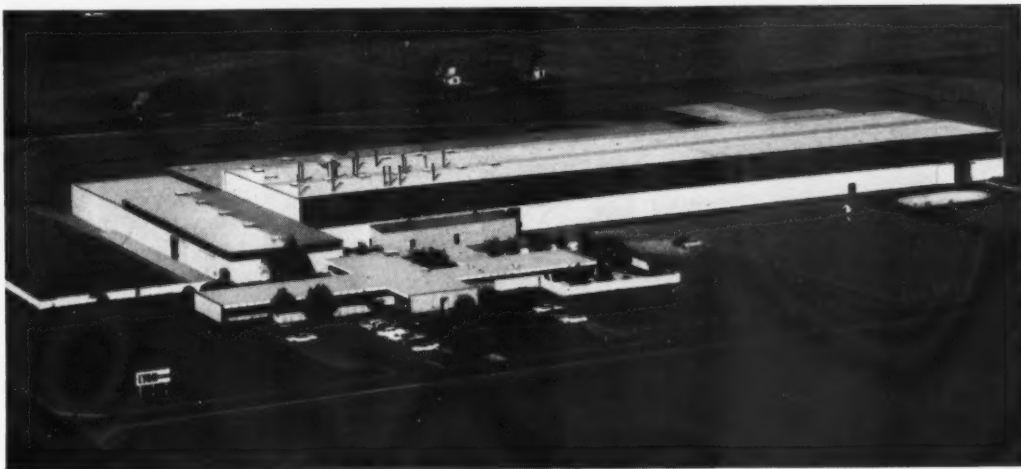
high filter ratio from 10 to as high as 35 to 1 on special applications.

Dust removed from the Dualaire is sent into hoppers in frequent small quantities not in large surges, according to Perlis.



DUST COLLECTION system at Dayton Foundry operates at 15,000 cfm, picks up particulate matter from shake-out operations, clears hot air of smoke and fumes. Collectors of this type can house as many as 60 bags.

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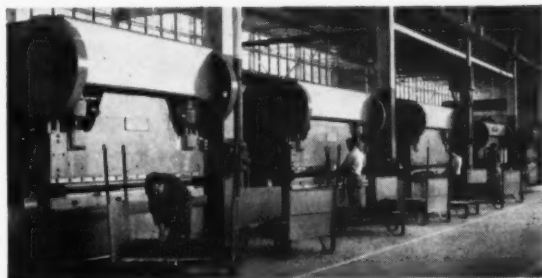
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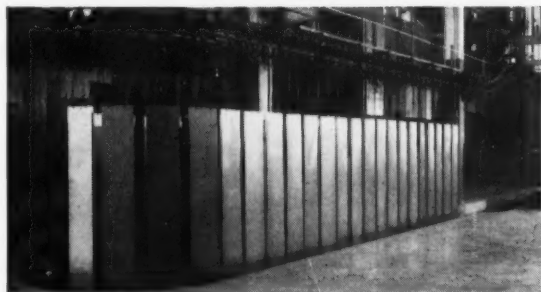
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Above—a portion of the modern electrostatic finishing line showing steel panels being conveyed to ovens for lifetime, baked-on finish.

Faster delivery and better service for Lyon customers throughout the West Coast area—that's the practical reason for this streamlined factory located in the City of Industry, just 18 miles from downtown Los Angeles. In addition to complete manufacturing facilities, this new plant also provides generous warehousing space. A separate building houses the modernly designed offices of the Los Angeles district sales staff.

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A COLLEGE RECRUITING team consists of both representatives from Personnel and Management. Here, left to right, Employee Relations Manager, John R. Doolittle, and Robert W. Jennings, Manager of Manufacturing Assembly, are conducting a typical college interview with Joel D. Sorem, an engineering graduate of the University of Santa Clara.

PERSONNEL RECRUITMENT for manufacturing growth

The need for qualified engineers to fill highly technical positions in Western plants has never lessened. Here is how the recruitment program of one successful Western electronics firm works.

OBTAINING suitable technical personnel is a problem every manufacturing plant faces today. The problem is doubly acute in the West. Many plants here are expanding rapidly and the need for additional qualified technical and production men is an immediate one. Then too because of the nature of much of our manufacturing, Western plants require a level of technical knowledge not easily found.

To solve this problem the larger Western plants have initiated regular recruitment programs. Some have been extremely effective; others not so well planned and executed have been disappointing in relation to the money expended.

Ampex Corporation, Redwood City, California, electronic manufacturer of magnetic-tape recorders, has developed one of the more successful recruit-

ment programs. The program is important to Ampex because creative engineers are vital to the company. It has no wall of patents to protect its position, and, in fields like electronics, resourceful engineering makes the difference between growth and stagnation. As such despite the firm's extremely rapid growth, it is still very much an engineers' company.

Finding engineers and establishing the initial contact is the basic problem today in recruiting top technical personnel for any electronic company. The company's recruitment program is based upon sound ethical procedures and advertising that emphasizes technical opportunity and a working environment which provides greater growth potential. Newspapers, "career" magazines, technical employment agencies, employment centers at trade shows, college recruiting of engineering students, and team recruiting, make



ENGINEERING RECRUITS are given the opportunity to look over their potential work area. Here, Senior Staff Engineer, Bernard M. Brenner, and Keith O. Johnson, recent engineering graduate of Stanford University, discuss an Ampex wideband instrumentation recorder.



up the majority of the program.

A realistic approach is taken by the company in its team recruiting. The team consists of both engineering and personnel representatives, a combination that eliminates the possibility of passing up any qualified engineers. Also, before it enters a specific area, the area has been predetermined "ripe" for recruiting, and several major objectives accomplished. These include placing ads in the area's leading newspapers requesting resumes; screening of resumes by personnel and engineering management; choice of a centralized city within the area for subsequent interviews; and

scheduling of all interviews.

Realizing that an engineer wants to see and talk with the men he will work with, the company stresses multiple interviews. Following his preliminary interview an applicant may have the opportunity for a further interview with the project engineer for whom he will be working. At that time, he is also encouraged to talk informally with other engineers in the group, and is given a tour of the plant and his potential work area.

All college recruiting interviews are held twice a year during the spring and fall semesters. Prior to



FOLLOWING his preliminary interview, an engineering recruit is given the opportunity to talk informally with the project engineer with whom he will be working. Bernard M. Brenner, Senior Staff Engineer (left) is shown with Keith O. Johnson (right), a recent graduate of Stanford University.



conducting any interviews at a college or university, literature and "request for interview" forms are sent to every graduating and graduate engineering student. During each student interview, personnel representatives evaluate the following: Scholastic standing, personality, maturity, general working attitude, extra curricular activities, and interest in practical as well as theoretical engineering. In addition, any related technical experience while serving in the Armed Forces, and actual working experience in areas such as drafting, layout, assembly, etc., are taken into consideration.

Because this company believes in "growing its own engineers," basic intelligence and a knowledge of practical as well as theoretical engineering are two of the most important qualities looked for in prospective recruits. At the conclusion of the interviews, any number of applicants may be selected for further evaluation by engineering management. All engineering college recruits are given "on the job" training under the direct supervision of each individual's project engineer or supervisor.

Educational opportunities are also stressed. Although a university degree is not mandatory, technical personnel are encouraged to further their education in areas that will develop their careers and work potential. In individual cases, financial support up to one-half the cost of tuition, books, and laboratory fees is given for accredited university extension or correspondence courses. Additionally, a limited number of specially selected graduate engineers are sponsored for advanced engineering degrees at Stanford University.

This program, part of the Stanford Honors Cooperative in Engineering, offers full tuition as well as any necessary time off without loss of pay.

Other educational advantages offered are seminar and internal training courses designed to bring the engineer up to date in technical areas such as the latest engineering developments in solid-state devices, feed-back controls, etc. All instructors for the seminar courses are specialists in their respective fields, and are obtained by Ampex from outside sources.

A "professional career ladder" as well as stock options are plans adopted by the company to reward their engineers. The man who welcomes supervisory responsibility has the opportunity to rise on the managerial side of the ladder, while the man who wants to stick to engineering can climb rungs equivalent in rank, prestige, and pay on the professional side. Promotions and pay raises are based strictly on performance. The man who makes an original contribution is tangibly rewarded, for Ampex does not restrict its stock options at the corporate level but offers them to engineers at all levels for specific achievements.

Probably the most effective method of recruiting can be accomplished by a company's own engineers. If an atmosphere has been created where engineers do their work with enthusiasm and deep personal interest, they will become active recruiters for their company. Engineer referrals by the firm's engineers have brought a large number of top technical people into the company that might not have been reached by any standard recruitment procedure.

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ONE OF A SERIES OF CHATS ABOUT
CONSERVATION AND CONTROL OF HEAT

SARCO TOPICS

SO YOU THINK YOU'VE GOT TEMPERATURE CONTROL PROBLEMS

When plant men get together and talk about their temperature control problems, strong men may weep. It's so darned basic—that narrow range of degrees which must be maintained—so closely allied to profit and loss. Let us tell you about one situation that may even top yours, and may clue you in on a good solution. It concerns wine, of all things.

Take those basic temperatures. Wine must be pasteurized at 140°F. Those are the facts of life in the world of wine. They might not seem too difficult to live with unless you are concerned with heat. Then you probably know how tough things can get when you have a rendezvous with a thermometer.

Take New York's Monarch Wine Company, producers of Manischewitz Wines. Their Problem: how to maintain the 140° temperature in the heat exchangers despite wide variations in the rate of wine flow. These variations, between 5 to 60 gallons per minute, result from slowdowns and recoveries in the bottling process. Problem: entire system must be capable of complete shutdown when necessary. Problem: wine temperatures must be raised to 140° as rapidly as possible, sometimes an immediate jump of 100°.

Attracted perhaps by aspects of the situation that had little to do with pure science, Sarco engineers applied the collective experience of Sarco technology to the solution

of this serious problem. The result for Monarch: the *degree of control* the process demanded—achieved through the excellent use of Sarco Temperature-Pressure Regulators, Float Thermostatic Steam Traps, Thermo-Dynamic Steam Traps, and Pipeline Strainers.

Sarco engineers, ever resourceful, divided each of the two large Cherry-Burrell plate-type heat exchanger units into two separate



sections with a blank baffle plate, each with a separate Sarco control. Thermal sensing bulbs were installed in wine discharge and throttling controls hooked into steam supply. As demand fluctuates, one or both regulators function to maintain the 140° temperature. In higher demand, both regulators are operative; as demand drops and flow decreases, only one regulator supplies steam. Pasteur himself would have been elated.

Each of six smaller capacity shell-and-tube heat exchangers required only one regulator, with the sensing bulb inserted into the outlet side of the wine filled shell, and the regulator throttling steam supply to the tube section. Thus, by controlling flow of steam to the exchangers on the basis of pressure and temperature, the Sarco regulators were able to maintain the temperature of the wine at precisely 140° regardless of fluctuations in demand or supply rate. Whew! A lot of engineering went into those two sentences.

From here on it's downhill. To secure complete cut off of the steam supply during scheduled shutdowns of the bottling run, solenoid valves were provided to supplement normal modulating action of the controls. To discharge widely varying loads of condensate continuously and remove immediately all air and incondensable gases, Sarco Float Thermostatic Steam Traps were installed on all condensate outlets. On the drips before each control valve a Sarco Thermo-Dynamic Steam Trap was installed to insure delivery of dry steam. Sarco

Pipeline Strainers were installed before all steam traps and valves to protect them against damage by any foreign bodies. And thus ends a classic story of the grape.

Still, this story has been condensed far too much, really, and we feel you've been cheated out of the story's more delicious details. You needn't be, however. We've printed the facts in detail for posterity and you in Sarco Case History 185, complete with drawings that practically make it a do-it-yourself kit. If you would like a copy, we will be flattered to receive your request, and dispatch it with dispatch.

OUT WEST WITH SARCO

Sarco did not arrive by covered wagon, but we've been westerners long enough to wear a ten gallon hat comfortably, and to have Sarco representatives in 12 western cities. This means your problems of conserving and regulating heat can get the full Sarco treatment. No room for addresses or phones here, but the list of cities and organizations to call follows:

Alaska, Anchorage, Alaska Trade Supply, Inc.; Arizona, Scottsdale,



A. C. Baechlin Co.; California, Los Angeles, T. H. Creears Corp.; San Francisco, Sarco Company, Inc.; Colorado, Denver, Equipment Specialties Co.; Idaho, Boise, Mechanical Equipment & Engineering Inc.; Montana, Billings, Lefler Engineering Sales; New Mexico, Albuquerque, Technical Service Co.; Oregon, Portland, R. H. Brown & Co.; Utah, Salt Lake City, Gritton & Wilde; Washington, Seattle, E. H. Norton Co.; Spokane, John L. Harvey Co.

ANYONE FOR KEY CHAINS?

Need a key chain? A tiny replica of a Sarco Thermo-Dynamic Steam Trap, Type TD-50 is attached but you can always remove it if you find it too commercial. There are many things you could use these chains for. Fishing sinkers? Lengthening a light cord? Even holding keys? Anyway, if your Sarco representative is out, write in.

Pardon our monopolizing the conversation in this series of paid communiques, but we're trying our best to interest you in certain subjects that concern us both—to the point where you'll communicate.

6899

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HARD-FACING ALLOYS

The latest technical information is included in this revised booklet on hard-facing alloys in coils. Nominal compositions for tube rod alloys are given as deposit compositions, not as rod compositions. Also includes latest data on application procedures. *Haynes Stellite Div., Union Carbide Corp.*

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CLEANING CHEMICALS

Handbook designed to help users of ultrasonic equipment select the chemical best suited for a specific cleaning problem. Gives extensive information on physical properties of most commonly used cleaning chemicals as well as suggested applications, working temperatures, and procedures. Tabulates 14 different types of cleaning media. *Branson Instruments, Inc.*

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PNEUMATIC PRODUCTS

A 64-page catalog covering compressed-air-line filters, pressure regulators, air-line lubricators, valves and other miscellaneous pneumatic products. Contains section devoted to useful engineering information such as compressed-air flow chart, moisture content of saturated, compressed air and dimensional data. *C. A. Norgren Co.*

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INDUSTRIAL GLOVES

Bulletin describes gloves of leather, leather palm, rubber coated and canvas materials for various industrial applications. Illustrations cover general purpose gloves, waterproof and durable coated fabric work gloves as well as special gloves for welders, pipe fitters and sheet metal workers. *Wick-Merit Glove Co.*

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PUMPS

Engineering manual contains 40 pages of valuable technical data on pumps for industry. Outlines information needed for pump selection, computation, suction limitations, constructions, comparison of pump characteristics, and operation. Lists materials recommended for pumping various liquids, conversion units. Contains many charts and graphs. *Marlow Pumps.*

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HOSE WIRE

Important technical data on hose wire is presented in this catalog sheet. Includes testing information on the ability of hose wire to adhere to rubber. Mechanical properties, finish and put-up are some of the other subjects covered. *H. K. Porter Co., Inc. Riverside-Alloy Metal Div.*

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VARIABLE SPEED DRIVES

A 120-page profusely illustrated bulletin on shovel base and integral type variable speed drives. Contains application classification tables, selection instructions, speed and horsepower tables for drip proof and enclosed transmissions. Also engineering data on overhung load capacities and minimum sprocket diameters. *Western Gear Corp.*

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CASE-SEALING ADHESIVES

Technical report with complete data on adhesive types, physical properties, common case-sealing problems and application information. Covers both dextrine and resinous emulsion type glues. Tables show influence of dilution on viscosity characteristics and other data on 13 adhesives specially designed for case-sealing applications. *Borden Chemical Co.*

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VENTILATOR

Bulletin discusses specific design features and operating characteristics of new direct drive centrifugal roof ventilator. Selecting and rating tables indicate relative quietness ratings, motor horsepower, fan speed and fan deliveries for different static pressure conditions. *American-Standard Industrial Div.*

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CASTER CHART

A 22x29-in. wall chart printed on fabric-type paper features the five standard caster series of the industry. Includes information on load limits, installation data, bolt hole spacings, wheel properties, and application data to simplify selection of replacement casters and wheels. *Rapids-Standard Co., Inc.*

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GLASS

Generously and attractively illustrated 68-page booklet reviews the history of glass and details the basic types of glass. The publication describes the expanding role of glass in science, industry, electronics and lighting. Data on new glass ceramic materials is included with a chart giving properties of selected glasses and glass-ceramics. *Corning Glass Works*

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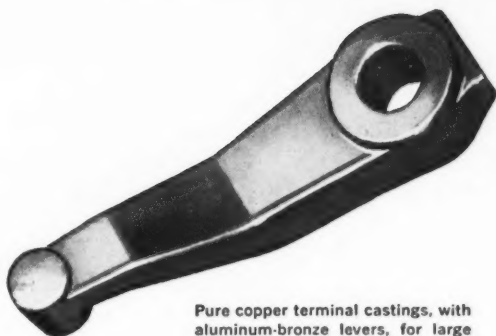
HINGED CLOSURES

Recent changes to improve product features and provide greater design uniformity of quick-opening hinged closures for blanking off pipeline and tank or vessel openings are described in this brochure. Illustrates typical vacuum, low- and high-pressure installations in petroleum, gas transmission, and chemical processing. *Tube Turns Div., Chemetron Corp.*

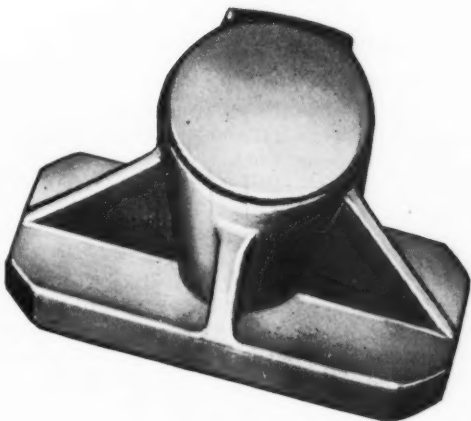
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Another case where Ampco does it better at Huntington Park...

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Pure copper terminal castings, with aluminum-bronze levers, for large circuit breakers. Copper checked by Magnatest for minimum conductivity of 97% I.A.C.S.



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Write for Bulletin



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Literature Advertised In This Issue

Lubricants for every size and type of machinery. Data book. *Lubriplate Div. Fiske Brothers Refining Co.*
Page 42 Circle No. 23

Temperature Control, an illustrated case history. *Sarco Co., Inc.*
Page 37 Circle No. 20

Insulating Materials for electrical-electronic products. Catalog. *Tri-State Supply Corp.*
Page 66 Circle No. 44

Connectors, all-metal, flexible. For gases and fluids. *Universal Metal Hose Co.*
Page 54 Circle No. 33

Route Map, point list for nation-wide thru trailer service. *Pacific Inter-mountain Express.*
Page 36 Circle No. 18

Cable Type Electric Hoist and motorized trolley. Bulletin. *David Round & Son, Inc.*
Page 75 Circle No. 52

Pneumatic Hoist for hazardous atmospheres. Bulletin. *David Round & Son, Inc.*
Page 75 Circle No. 57

Steel Buildings booklet covers new line. *Armco Drainage & Metal Products, Inc.*
Page 41 Circle No. 22

Mechanical Packings, illustrated catalog. *Searle Leather & Packing Co.*
Page 55 Circle No. 34

Chain Drives catalog, 100 pages with engineering section. *Acme Chain Corp.*
Page 9 Circle No. 7

Metal Products, 100-page catalog. *Lyon Metal Products, Inc.*
Page 33 Circle No. 17

Sand and Centrifugal castings of pure copper. Bulletin. *Ampco Metal Inc.*
Page 39 Circle No. 21

Converting Dempster-Dumpster systems from "container haul" to "no container haul" systems. *Dempster Brothers, Inc.*
Page 15 Circle No. 11

High Torque Set Screws booklet. *Industrial Fastener Div., SPS*
Page 6 Circle No. 4

Gear Boxes, illustrated catalog. *Hub City Iron Co.*
Page 50 Circle No. 29

Diamond Floor plate for safety. Bulletin. *Alan Wood Steel Co.*
Page 10 Circle No. 8

Tractor Shovels, wide selection sizes, attachments. Booklet. *Frank G. Hough Co.*
Page 73 Circle No. 51

New Compact Drives for capacities from 1 to 1500 hp. Bulletin. *Dodge Mfg. Corp.*
Page 58 Circle No. 39

Adjustable Speed Drive with all-transistor control. Bulletin. *Louis Allis.*
Page 47 Circle No. 26

Fastener Equipment designed to resist extreme pressures. Catalog. *Coast Industrial Supply Co., Inc.*
Page Cover 2 Circle No. 1

Rivet-Setting machines that can be flexibly grouped. Engineer's kit. *Milford Rivet & Machine Co.*
Page 9 Circle No. 6

Maintenance-Free industrial power sweeper. Booklet. *Lincoln Floor Machinery Co.*
Page 45 Circle No. 25

Interchangeable Coupling bulletin. *Perfecting Service Co.*
Page 57 Circle No. 37

A Packaging System to meet specific needs. Brochure. *Bemis Bro. Bag Co.*
Pages 48 & 49 Circle No. 27

Fences make good neighbors, assure plant protection. Catalog. *Anchor Fence.*
Page 16 Circle No. 12

Floor Maintenance Machines that do several jobs. Catalog. *American Floor Machine Co.*
Page 71 Circle No. 50

Hoists that can make up to 100 lifts per hour. Bulletin. *Harnischfeger Corp.*
Pages 19 & 20 Circle No. 15

GRINDING WHEELS

Bulletin about general purpose off-hand grinding includes recommended grain and grade specifications and describes Red Center plastic reducing bushings which permit quick change of arbor hole sizes and provide a precision engineered fit. *Simonds Abrasive Co.*

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NEW ALLOY

A newly introduced free machining chromium-nickel stainless steel designated Uniloy 303MA is described in this booklet. Discusses advantageous features of the new material, corrosion resistance, composition, availability, technical data and performance. *Universal-Cyclops Steel Corp.*

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FIRE FIGHTERS

Original high pressure fog and its effectiveness in fighting fires is featured in this 16-page catalog. Complete specifications and performance features are listed for fire fighters including stationary, mobile and skid-mounted equipment. *John Bean Div., Food Machinery & Chemical Corp.*

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METAL FINISHING

A wide range of machines and equipment designed to automate metal finishing operations is described in this fully illustrated 29-page guide. Features photos of installations and provides profit-increasing data for large or small firms contemplating automation. *Meaker Co.*

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LIMIT SWITCHES

Precision snap-action limit switches for highly-repetitive operation in limited-space industrial applications are described in this brochure. Illustrates three available forms. Typical application is also pictured and dimensions and ratings are included. *General Electric Co.*

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COPPER TUBING

Formed copper tubing and how it is fabricated in a multitude of shapes, is explained in this bulletin. Illustrates typical shapes. Chart shows the recommended minimum and maximum commercial radii for firm's formed copper tubing in all types of bends. *Mueller Brass Co.*

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ALLOYS

Bulletin covers chemical compositions, physical properties and typical applications of a series of special wear and corrosion-resistant copper-base alloys and lists the forms in which each alloy is available. Also describes production facilities for sand, centrifugal and shell mold castings, extrusions, machined parts, fabrications and finished products. *Ampco Metal, Inc.*

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SOLDERING IRON

A versatile soldering iron for the electronics industry is the subject of this catalog. Contains photos, illustrations and specifications on component line including interchangeable handles, cord sets, heat cartridges and 42-thread-on soldering tips, plus accessories. *Unger Electric Tools, Electronic Div. Eldon Industries, Inc.*

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ELECTROPLATING

New edition of electroplating processes bulletin describes 19 plating and other metal finishing processes and procedures. Solution preparation, type of deposits, operating conditions, equipment required, and applications are listed for each of the processes in the 24-page booklet. *Hanson-Van Winkle Munning Co.*

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SILVER BRAZING ALLOYS

Well illustrated and diagrammed, this 24-page manual discusses brazing procedures, problems and solutions. Thoroughly discusses the alloys from those in standard rod forms to a new introduction which incorporates the fluxing agent in the center of the wire, stressing advantages and applications. Diagrams help select the proper alloy. *Air Reduction Pacific Co., div. Air Reduction Co., Inc.*

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SOCKET SCREWS

Data about socket screws with a Nylok self-locking insert is contained in this bulletin. Discusses advantages and special features of the Nylok insert; includes technical data on the properties of the nylon, pellet size and location, and dimensional standards available. *Bristol Co.*

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CUT-OFF MACHINE

Bulletin describes four machines: for dry abrasive cutting, for wet abrasive cutting, for non-ferrous cutting and for wood cutting. Operational photos describe the precision engineered features that save production time and promote operating economy. Includes specifications and listings of all motors and motor controls. *Rockwell Mfg. Co., Delta Power Tool Div.*

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CASTINGS

Brochure describes and illustrates casting facilities at Western foundry using the centrifugal process. Covers melting equipment, spinning, heat treating, machining, mold stock, shapes and sizes, alloys, and quality control. *Centrifugal Casting Co.*

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CHLORINATED NAPHTHALENES

A group of chlorinated naphthalenes which have use as elements of flameproofing compounds and as binders for the glass, ceramic and powder metallurgy industries, is described in this bulletin. Solubility and general compatibility with other materials are described and comparative tables of chemical and physical properties are included. A series of charts depict variations in fundamental properties. *Koppers Co., Inc., Tar Products Div.*

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TUNNEL DIODE

Humorously illustrated handbook contains information to help design engineers learn how to use the Uni-Tunnel Diode. Details the electrical and physical parameters of the tunnel diode, testing criteria, and presents typical circuit applications. *Hoffman Electronics Corp., Semiconductor Div.*

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VERSATILITY IN RUBBER

Booklet details the broad abilities of rubber products to absorb sound and vibration, resist high voltage, solvents, oils and chemicals. An outline of types of rubber materials, importance of mold designs and a description of manufacturing processes give further insight into problem-solving steps in development and production of rubber parts. *Roth Rubber Co.*

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MOTOR-DRIVES

Comprehensive 88-page publication about ¼ through 40 hp. motor-drives. Data includes full rating tables, with new additional output speeds. Dimension diagrams and charts for over 100 different assemblies, new higher overhung load and new controls, are also contained in this well illustrated book. *Reliance Electric & Engineering Co.*

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GLASS WORKS

Techniques in the printing and decorating of both treated and untreated low and high density polyethylene is the subject of this brochure. Illustrated with schematic diagrams, the booklet compares the principles of hot stamping, flexography, gravure, offset lithography, silk screening, transfer labeling, and four-color dry offset lithography. *W. R. Grace Co., Polymer Chemicals Div.*

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CONVEYOR IDEAS

Brochure of cost-cutting ideas contains pictures and story captions about recent conveyor installations. The idea-stimulating brochure covers a broad range of package conveyor solutions to problems of lowering handling costs. *Standard Conveyor Co.*

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POWER TRANSMISSION

Profusely illustrated catalog covers equipment from the smallest gearbelt drives in precision business machines to huge steel mill chain drives. Discusses malleable iron bushing system which is interchangeable throughout the entire line of power transmission equipment. Includes specifications and engineering data. *Browning Mfg. Co.*

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PULP DIGESTER CLADDING

Reprints of two articles dealing with stainless steel weld metal overlay linings for pulp digester vessels, and the current status of alkaline digester corrosion. Liberally illustrated, the articles survey digester cladding failures and outline practical recommendations on improving the quality of overlay linings. *Air Reduction Pacific Co., Div. Air Reduction Co., Inc.*

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CAMPBELL MAKES CHAIN IN THE WEST...FOR THE WEST

Everyone west of the Rockies gets greater convenience and better service from Campbell's completely integrated, modern chain plant at **Union City, California**. Ready to back up Campbell's warehouses on the West Coast, this major chain plant makes it possible for you to get prompt shipment of any chain in Campbell's complete line. The Union City plant is the newest link in Campbell's nationwide network of manufacturing and warehouse facilities to assure you the best in delivery and service.



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3 FACTORIES: York, Pa.; West Burlington, Iowa; Union City, Calif.

WAREHOUSES: Medford, Mass.; Atlanta, Ga.; Dallas, Texas; Chicago, Ill.; Portland, Ore.; Seattle, Wash.; Los Angeles, Calif.

THE ONLY CHAIN COMPANY WITH FACTORIES AND WAREHOUSES COAST-TO-COAST

SILICONES

Graphically illustrated booklet with photos, charts and graphs, goes into detail about what silicones are, describes their manifold uses for consumer and industrial products, and suggests ways in which they can be adapted to a host of new applications. *Silicones Div., Union Carbide Corp.*

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SET SCREWS

The three important "holding powers" of a properly tightened set screw are analyzed in this technical bulletin. The well illustrated booklet includes microphotographs of grain, structures and tabulations of holding power. There's also a plot of resistance to loosening under vibration, comparing the knurled point with other standard types. *Standard Pressed Steel Co.*

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DRYERS

Fluid-Flo dryers and how they work are described in this folder. Illustrates how this unit can be applied in drying, cooling, roasting, and other processes, with minimum product loss or degradation. A full-page drawing of the dryer in an engineered installation shows how granular solids are processed through the system. *Link-Belt Co.*

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TORQUE-ARM REDUCER

Latest addition to a line of torque-arm speed reducers that develops greater torque is the subject of this bulletin. Contains photograph, dimensional drawings, weights, horsepower data and a table of recommended V-belt drives. *Dodge Mfg. Corp.*

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MACHINING THERMOPLASTICS

Recommended procedures for machining and finishing thermoplastic sheets, rods and tubes are outlined in this booklet. Covers sawing, routing, drilling, turning, shearing, punching, grinding and finishing. Presents general recommendations for tool design, feed and speed, and use of coolants. Gives special machining characteristics of acrylics, nylon, fluorocarbons and polyethylene. *Cadillac Plastic & Chemical Co.*

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BURNERS

Eight atmospheric gas-fired burners with maximum firing capacities from 10,000 to 2,750,000 b.t.u. per hour are presented in this bulletin. Provides dimensions, specifications, engineering data. Explains operating principle, gives instructions for building atmospheric combustion systems and illustrates six typical burner installations. *Eclipse Fuel Engineering Co., Combustion Div.*

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WINDOW WASHING SYSTEMS

Reasons why window-washing equipment should be considered when planning a new building are outlined in this booklet. Explains savings in cleaning time, safety, and how the equipment used for window washing is also helpful for outside building maintenance. Includes engineering data on various types of window washing equipment. *Cleveland Tramrail Div., Cleveland Crane & Engineering Co.*

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VALVE DESIGN

Bulletin describes a new concept in valve design that has been originated to solve the problems of valve wear and maintenance in controlling abrasive or corrosive fluids and gases. Illustrated, the brochure supplies descriptions, specifications, outstanding features, optional features and dimensional data. *Airmatic Valve, Inc.*

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DRILL BUSHINGS

Catalog incorporates recently adopted American Standards Association symbols for drill bushings. Contains technical data on ground and underground press fit, head press fit, fixed and slip renewable bushings, liners and headliners. Thin wall bushings are shown for the same categories. Includes 6,800 symbols with comparisons of the new ASA symbols. *Ace Drill Bushing Co.*

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EQUIPMENT CLEANING

Pamphlet discusses a new technique of cleaning industrial equipment which utilizes a lightweight foamed solvent for greater efficiency and economy. *Dow Industrial Service.*

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ARC WELDING

Forty-page directory of arc welding electrodes, equipment and supplies. Presents data on AWS electrode classification and discusses correct electrode selection for every type of welding application. Arc characteristics, welding procedures, and physical properties are listed for each electrode. *Lincoln Electric Co.*

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TORQUE MEASURING

Brochure illustrates how to measure the torque characteristics and speed for motors, gear trains, servo mechanisms and potentiometers. Covers torque ranges from 1/4 gm-cm to 200 lb-in. Includes formulas for computing power and efficiency and methods of using stroboscopes and tachometers for analyzing rotating motion. *Power Instruments, Inc.*

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WIRE FORMING

Design and Tooling Handbook covers versatile Fourslide process of making parts from wire and metal strips. The 36-page handbook is profusely illustrated with examples of clips, eyelets, clamps and fasteners that can be formed on these machines. A natural for cost-conscious Western manufacturers. *A. H. Nilson Machine Co.*

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AUTOMATIC GRINDING

A rise and fall abrasive belt grinder for surface, contour and form grinding is the subject of this booklet. Outlines advantages of multiple production operations in one set-up and many more production benefits including material, tooling, material handling and quality control savings. Lists standard specifications. *Eastern Machine Screw Corp.*

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MOTOR CONTROL

An ultra precise motor control for use where high response of speed or positioning is required is the subject of this bulletin. Explains what it is, what it does, operation, and applications including numerically controlled machine tools, automatic fusion welding equipment, material processing and others. *Sciaky Bros., Inc.*

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HUMIDITY CONTROL

This 67-page profusely illustrated manual is devoted to humidity measurement and control systems. First section deals with 12 typical and specially-tailored systems which are readily adaptable to the majority of humidity measurement-control problems in industry and research. *Hygro-dynamics, Inc.*

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ELECTRONIC WELDING

New technical report on the metal-lurgy of electronic welding covers the resistance welding process, significant factors in resistance welding, evaluation of weldability of various materials and weldability of clad materials and dissimilar materials. Illustrated with photos and magnified welds. *Vacuum Tube Products Div., Hughes Aircraft Co.*

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BOILERS

Boilers for low pressure heating of commercial and industrial buildings is the subject of this bulletin. Includes tabulated data on ratings and dimensions of boilers available in 16 sizes. Covers features, typical specifications and a full selection data for available heating coils and induced draft fans. *American-Standard Industrial Div.*

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WOOD PANEL

Handy folder brochure describes and illustrates the versatility of a new wood panel product for use as underlayment in floors and counter tops, and as cabinet parts, shelving and wall paneling. Also outlined are detailed instructions for installing the wood panel underlayment in the floor system. *Weyerhaeuser Co., Silvatek Div.*

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OVERLOAD FOR POWER PRESS

A newly designed hydraulic overload pitman which can be used on practically any power press to eliminate bent or broken crankshaft, press frame or broken tools and dies, is described in this bulletin. Discusses operation, includes a schematic and specifications. *Dayton Rogers Mfg. Co.*

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PNEUMATIC CONTROL

How drive speeds of machines and processes can be automatically controlled and regulated by simple pneumatic instrumentation is the subject of this booklet. Concise drawings and descriptions show how the instrumentation can be applied to control liquid level, line pressure, process temperature, constant flow, steam pressure and motor loading. *Reliance Electric & Engineering Co.*

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PRECISION SWITCHES

New 20-page catalog covers precision switches for industrial, commercial, data processing, airborne and electronic applications. Contains photos and descriptions of over 200 items including miniature and special purpose switches, electronic switch-circuit assemblies, lighted push-button, toggle, limit, proximity and mercury switches. *Micro Switch Div., Minneapolis-Honeywell Regulator Co.*

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WILSHIRE



NEW 4400 WILSHIRE INDUSTRIAL POWER SWEEPER



- Variable Speeds
- Sweeps 68" path
- Holds ½ ton

CUT SWEEPING COSTS WITH THIS MAINTENANCE-FREE SWEEPER

engineered so the Maintenance Department
can Add to the Net Profit of your company!

An 18 HP, 2-cylinder, 4-cycle gasoline engine powers the all-new 4400 sweeper. Two speed transmission. One foot pedal controls forward, reverse and hopper dump. Heavy duty drive chain runs in oil—permanently sealed. Self-adjusting idler pulleys. Operator controls pressure of full floating main broom and side brushes. Exclusive 12-bag filtering system. Covers a minimum of 120,000 sq. ft. per hour.



TOUGH...POWERFUL...DEPENDABLE

Rough treatment and constant use won't hurt this solid steel "baby." The Wilshire 4400 is plenty rugged, yet simple to operate and fully maneuverable even in crowded areas. Insist on a competitive demonstration before you buy. For guaranteed machine amortization, specify the new Wilshire 4400—*tops in power sweepers!*

SEND FOR PROOF TODAY!

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LINCOLN Floor Machinery Co. and WILSHIRE Power Sweeper Co.
divisions of **AMERICAN**
LINCOLN CORPORATION

WILSHIRE POWER SWEEPER CO.,
Dept. WI-361, Toledo 2, Ohio

Please rush literature and specifications,
also like to have a free demonstration.

☐ We would

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Company _____
Address _____
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SPECIAL MANUALS

FOR YOUR FREE COPY, CIRCLE APPROPRIATE KEY NUMBERS ON POSTCARD, p. 52

RACKS, SHELVING, BINS

STORAGE EQUIPMENT in the form of bins, racks and shelving represents a substantial investment for Western plants. How well this investment pays off is directly connected with how well the storage system has been planned.

The improvement of storage facilities in a Western manufacturing plant is a cost saving area that deserves thorough investigation. Careful planning and integration of storage methods into general plant operations can pay off. Too often, however, not enough time is spent in working out a good storage system. One reason is that it is easy to set up a workable arrangement. Once set up the system tends to perpetuate itself. Because a system is workable does not mean that it is a good system or that it cannot be improved. A mediocre storage system means a continuing loss in operating costs. It also means that

part of the value of the storage equipment is being lost through inefficient use.

To get the most from a plant storage system, it must be planned not only from the standpoint of what is desired in the total plant operation and the space available, but also the planner must have a knowledge of the various types of bins, racks and shelving and their capabilities. In this way it is possible to select the type of equipment most suitable for your individual need.

The many different types of racks, bins and shelving on the market all have their individual capabilities and advantages. By matching your needs with the advantages offered, you can save money. To help make a correct selection, the Editors of WESTERN INDUSTRY have compiled a comprehensive list of manuals on racks, bins and shelving. We urge you to take advantage of this.

Slotted Angle Racking

Many photos illustrate example of slotted angle used effectively for various types of storage. Shows how patterns of precision holes and slots speeds assembly and gives complete freedom for custom-designing. *Acme Steel Co.*

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Storage Planning Guide

Simplified principles of materials storage planning are set forth in this handy booklet. Contents include the need for better storage, outline of planning fundamentals, principles of adjustable racking, typical installations, engineering services, a storage planning detailer and a layout grid. *Sturdi-Bilt, Material Handling Div., Union Asbestos & Rubber Co.*

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Bins for Small Parts Handling and Storage

Bulletin about a variety of interchangeable uprights, rails and bins that make it possible to assemble a bench unit in size or shape to fit almost any small parts handling requirement. Includes illustrations and dimensions. *Bathey Mfg. Co.*

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Adjustable Storage Racks

Attractively prepared brochure effectively illustrates the lock assembly feature of Series 75 storage racks. Shows two parts, the upright frames and the lock in shelf beams, that make up the adjustable racks which can be erected in a multitude of arrangements. Chart lists shelf beam loads. *Palmer-Shile Co.*

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Cantilever Arm Racks

Bulletin about an adjustable arm rack for flexible horizontal storage requirements. Describes movable arms which are attached to vertical columns without tools. Contains drawings of the rack components. *Multi Rack Systems Div., Green-Penny Co.*

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Stackable Bins and Racks

Brochure describes a system of stackable bins for processing, assembly and storage, and stack racks designed to make the bins instantly accessible. Profusely illustrated with application photos, the booklet also explains the flexibility feature of the system and resulting economies. Contains dimensional data. *Stackbin Corp.*

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BUILDING-BLOCK FLEXIBILITY. 6"x6" transistor control panels permit adding and removing of circuits in your plant by your own electrician.



FINGERTIP OPERATOR CONTROL. Small potentiometers greatly reduce size of operator's control panels and are dust tight for maximum protection.

RUGGED FLEXITORQ MOTORS. Very high commutating ability; 400% short-time and 15% continuous overload capacities; fast acceleration and deceleration.



DEPENDABLE TRANSISTORS. Rated 35 volts, but stressed to only half their normal rating. Unusually high gain with twice the speed of response and only half the drift in gain of tubes. Transistors never fade — normally provide 15 or more years of service.

The New LOUIS ALLIS Select-A-Spede® Drive —First with field-proved All-Transistor Control



a high-gain, high performance d-c drive with unmatched flexibility and low upkeep

Here's a superior adjustable speed drive with simplified transistor-magnetic amplifier control. It's the easiest drive to set up and operate. A twist of the dial gives you stepless speed adjustment from zero to full speed in either direction. Each adjustment is independent, thus sparing you the need for compensating adjustments of inter-related settings. You get more consistent day to day operation because transistors — *unlike tubes* — are highly dependable.

The new Select-A-Spede defies obsolescence. To add functions you simply have your electrician install any of 13 "building-block" control circuits as your conditions require. These circuits come on inexpensive 6" x 6" panels ready for installation and are immediately available from Louis Allis stock. Thus a rebuilding or adaptation job that, on former equipment, cost thousands of dollars — excluding downtime — can now be done at

a fraction of the cost and time *right in your own plant!*

High quality transistors, field proven in missiles and other advanced electronic equipment, assure you of a high degree of dependability with a life expectancy of 15 or more years. Printed low-voltage transistor circuits are virtually trouble-free and can be quickly and easily replaced from low-cost stock.

Further savings are provided by the new Louis Allis Flexitorq® drive motors through vastly improved commutation, low brush wear, and their ability to safely withstand momentary overloads of 400% of normal horsepower rating.

Select-A-Spede sizes from 5 to 400 hp, speed ranges up to 20:1. Contact any one of the 60 Louis Allis District Offices for information and application assistance. Or write for bulletin 2001 to The Louis Allis Co., 438 E. Stewart Street, Milwaukee 1, Wisconsin.

LOUIS ALLIS

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES
BURLINGAME • DENVER • LOS ANGELES • PHOENIX • PORTLAND • SALT LAKE CITY • SEATTLE

SA-202

Drum Racks

Bulletin covers racks which range from barrel stands for draining individual 55 gallon drums up to multiple storage racks designed to specific customer requirements. Schematics illustrate side-loading and end loading styles. Discusses styles of racks, construction and explains how to group racks. *Economy Engineering Co.*

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Racks, Shelving and Bins

Profusely illustrated 100-page catalog with sections devoted exclusively to racks, shelving and bins. Describes revolving four and seven-shelf bin units for use in tool-rooms, assembly and stockroom. Data on shelving covers exclusive features and describes open sections, closed sections, bin type sections, tool sections and counter sections. Illustrations show how any rack can be easily assembled from standard sections and parts. *Lyon Metal Products, Inc.*

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Tote Boxes

Descriptive and technical data about deep nesting tote boxes made of a polyethylene material and available in a wide range of sizes. Covers features of resistance to acids, grease, chemicals and detergents; dimensional stability from minus 180 to 250 degrees and other pertinent information. *Pioneer Products, Inc.*

... FOR YOUR COPY, CIRCLE NO. 208

Steel Shelving

Profusely illustrated 27-page bulletin describes steel shelving of both the open and closed type; closed type shelving bins, ledge shelving, counter type shelving and shelving cabinets with swinging and sliding doors. Includes specifications for parts and accessories, a shelf capacity chart and data on how to plan installations. *Columbia-Hallowell Div., Standard Pressed Steel Co.*

... FOR YOUR COPY, CIRCLE NO. 209

Adjustable Storage Racks

Catalog shows graphically the simplicity of a racking system composed of three basic parts that is instantly adjustable to changing needs. Includes numerous application photos and discusses economical mass storage, maintenance-free galvanized racks, and bulk storage that can be adjusted in seconds to bulk bins. Charts give specifications, loads and applications. *Sturdi-Bilt, Material Handling Div., Union Asbestos & Rubber Co.*

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Versatile Tubular Racks With a Universal Clamp


Profusely illustrated bulletin shows many examples of how ordinary pipe or tubing is used with a universal clamp to build storage racks. Explains simplicity and economy of building the racks. Includes separate case histories of nine applications in a cross section of industries. *Tube-Strut Corp.*

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Make a sheet product?

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Bemis PANEL-PAK is an efficient, low-cost system for packaging any sheet product now manufactured by industry—steel, aluminum siding, roof decking, hardboard, wallboard, fiberglass, etc.

To find out how this versatile system can work for you, just let us know your packaging needs. We'll send a skilled, experienced packaging engineer to

survey your plant, study your packaging requirements. He'll give you the whole factual story: cost data, floor space and labor savings, and *how your existing packaging areas can be adapted to PANEL-PAK system with only minor adjustments.* Plus a plan showing space requirements of a Bemis packaging system. All without any obligation.

Racks for Bars, Tubing and Pipe

A rack that holds conveniently up to 106,000 pounds of bars is the subject of this bulletin. Explains how use of the racks make it possible to stack and unstack bundles of hot rolled and cold rolled bars, ferrous and nonferrous tubing and pipe. *Cady Metal Fabricating Co.*

... FOR YOUR COPY, CIRCLE NO. 212

Bins and Racks

This 28-page booklet covers a material handling system in which bins and racks are part of a group of interchangeable and interlocking units. Illustrated sections cover stacking pallets, bins and racks. *Factory Service Co.*

... FOR YOUR COPY, CIRCLE NO. 213

Shelving and Parts Bins

This 38-page generously illustrated booklet contains data on shelving and component parts, library shelving, automotive parts bins and component parts and special fabrication. Includes stacking boxes and portable hang bins. *Fort Steuben Metal Products Co.*

... FOR YOUR COPY, CIRCLE NO. 214

Hopper Boxes

A combination tote box, bin is described and illustrated in this brochure. Shows advantages of utilizing this type of box which can be stacked and has a side opening so that changeover handling is eliminated in getting materials from stock to production. *Powell Pressed Steel Co.*

... FOR YOUR COPY, CIRCLE NO. 215

Reel Racks

Descriptive information about reel racks for storage and dispensing of any reeled product in the least floor space is contained in this bulletin. Includes illustrations and schematic of racks for single face and double face storage. *Bernard Gloekler North East Co.*

... FOR YOUR COPY, CIRCLE NO. 216

Steel Storage Racks

High-strength steel storage racks with a positive-locking feature are described in this bulletin. Discusses space saving advantages of the racks which are adjustable at two-inch increments with multi-use applications in several standard sizes. *Aacon Unitary Storage Equipment Co.*

... FOR YOUR COPY, CIRCLE NO. 217

Parts Bins and Shelving

New 31-page catalog includes sections on bins and shelving. Covers parts bins designed for orderly visible storage of parts and equipment, both in packages and in bulk. Another section illustrates open, closed and ledge type shelving. *Bay Products Inc.*

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Portable Bar Racks

Bulletin outlines advantages of using portable bar racks that are designed for one man handling in unit loads based on crane capacity and manufacturing requirements. Includes illustrations, specifications, design variations and accessories. *Jarke Mfg. Co.*

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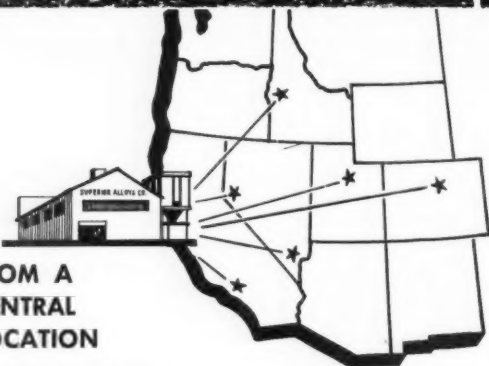
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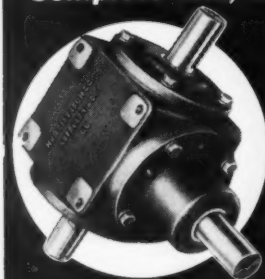
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All-Purpose Metal Shelving

Metal shelving that features simplicity, strength and clean design is described in this brochure. Explains operation of patented all-purpose key which locks shelves and end panels securely in position while supporting heavy loads. Describes 15 parts for rapid assembly; discusses basic shelving types and lists measurements. *W. R. Ames Co.*

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Shelving, Bins and Angles

Catalog devoted to shop equipment including steel shelving, steel bins and slotted angle for swift, easy assembly into a multitude of structures for shop, warehouse or tool-room. Discusses features and includes full dimensional data. *Equipto*

... FOR YOUR COPY, CIRCLE NO. 221

Universal Storage Racks

Profusely illustrated brochure devoted to universal storage racks that feature an exclusive double-lock design. Explains easy installation of the two-part rack and how the parts can be adapted to any type of storage. Includes specifications of standard stock uprights. *Multi Rack Systems Div., Green-Penny Co.*

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Converting Standard Pallets into Portable Racks

A new kind of pallet racking hardware that converts standard pallets into portable racks is pictured and described in this bulletin. Covers easy assembly and versatility in use for permanent or portable storage. Includes stacker specifications. *Sturdi-Bilt, Material Handling Div. Union Asbestos & Rubber Co.*

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Slotted Angle System

Thirty basic joint designs that can be made with slotted angle are illustrated in this brochure. Pictures and explains how the slotted angle can be used for light and heavy duty storage racks, bar stock and pipe racks and many other uses. Discusses features and explains how to erect. Includes 28 separate application photos. *Flex-Angle Corp.*

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Storage Cabinets

Attractively illustrated brochure about modular industrial storage cabinets built to accommodate the sizes, shapes and weights typical in industrial parts, tools, gauges, accessories and sub-assemblies. *Vidmar, Inc., Div. Volkert Stampings, Inc.*

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Unitized Assembly Containers

Colorfully illustrated brochure about a plastic stacking box with hopper front that is ideally suited to the production, assembly line feed and storage of small parts. Outlines features, dimensions and illustrates application in a rotary assembly, semi-circular, straight and combination assembly as well as floor stands and mobile truck assembly. *G. B. Lewis Co.*

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Phosphatized Shelving

Over 130 photos are used to illustrate steel shelving units in this 36-page catalog. Contains full information on boltless T-line shelving, angle shelving, tool storage inserts, drawer case units, bin units, custom shelving arrangements and truck shelving. Covers typical installations, selection tips and describes pre-paint phosphatizing process. *Penco Div., Alan Wood Steel Co.*

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Live Storage Rack

Bulletin about a storage rack designed especially for order filling. Explains how all cartons of the same items are stored single file on wheel rails so that removal of the first carton causes the remainder of the column to move forward. Discusses features, applications and custom designing. *M-H Standard Corp.*

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Pallet and Drum Racks

Catalog includes section on storage racks for pallets and drums. Contains schematics of type B racks designed for storing three or more pallets high, one wide; type C racks for three or more pallets high, two wide; and type D racks for two high, one pallet deep. Includes dimensional data on drum racks. *Lewis-Shepard Products Inc.*

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Special Racks, Bins

Drum storage racks, a vertical bar rack and pigeon hole bin units are among special equipment items described in this illustrated catalog. Includes dimensional data. *Pucel Enterprises, Inc.*

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Barrel, Skid and Pallet Racks

A drain rack for horizontal storage of drums so that each drum may be handled, removed or drained without disturbing other drums is illustrated in this brochure. Describes how pallet or skid loads can be stored on racks so that order can be quickly "picked." *Barrett-Cravens Co.*

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Bin System

Attractively illustrated 31-page booklet about a complete system for bulk material handling from filling, storing, and transporting to discharging. Details the system and shows special applications and adaptations of both liquid and dry materials handling bins. Special-design bins are also covered. *Tote System, Inc.*

... FOR YOUR COPY, CIRCLE NO. 232

Rack System for Small Parts Handling

How bins are converted quickly into small parts hoppers by means of an easily attached combination lid and tray is explained in this bulletin. Describes how hoppers are supported in racks that permit extreme flexibility of installation. Includes photos and specifications of boxes, lids and racks. *Nestier Corp.*

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One of these sling chains will meet your most exacting needs

One-day delivery is forthcoming when you specify ACCOLOY KUPLEX Sling Chains. Made up locally by an authorized KUPLEX distributor, these slings feature matched Accoloy steel components, which have been proof-tested at the factory at twice working load limits. Assembled from Drop-Forged Shaped Masterlink, Kupler and Hook plus Accoloy 125 chain, they're available in six chain sizes ($\frac{1}{4}$ " to $\frac{7}{8}$ " in single, 2-leg, 3-leg and 4-leg styles.

Factory-built all-welded construction is assured when you buy ACCO Registered Sling Chains. Accoloy 125 chain is welded under scientific control and heat-treated to optimum strength levels. Registration ring and certificate—signed by ACCO—attest to successful test performance of the sling.

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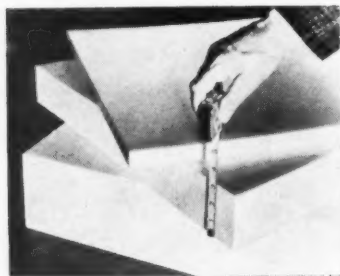
FOR WESTERN PLANT OPERATION, PRODUCTION AND MAINTENANCE



USE RIP OUT POSTCARD, PAGE 52, FOR MORE INFORMATION ON PRODUCTS DESCRIBED

TEFLON SHEET

... now available in large sizes



Sheet forms of Teflon TFE-fluorocarbon resin up to 8 inches thick and 25 inches square are now available. Teflon sheet was previously supplied in sizes up to 2 inch thick in 12 inch square sections, and the largest known

sheet previously on the market has been reported to be of 3 inch thickness. Production of the new sizes will begin immediately in facilities recently engineered for this purpose. The sheets are designed to provide fabricating savings and new design possibilities in the electrical, chemical and mechanical industries. At the same time, a general price reduction has been announced on the company's line of TFE-fluorocarbon mill shapes including rod, tubing and tape. Reductions of an average of 10% reflect continuing decreases in material costs and increased efficiency in processing the comparatively new resin. *Polymer Corp.*

... FOR YOUR COPY, CIRCLE NO. 300

VARIABLE SPEED PULLEYS

... provide flexibility and economy

A versatile line of variable speed pulleys rated at 20 to 25 hp. at 1750 rpm and 10 to 15 hp at 1150 rpm is now available. The pulleys provide instantly variable ratios up to 3 to 1. Known as Nos. 320 and 325, the pulleys use a No. 27 (2¾-inch) top width variable speed belt. They can be used with a number of NEMA frames, including sizes 215, 254, 254U, 284, 284U, 286U, 324, 324U, 326 and 364. Standard bores are 1¼, 1½, 1¾ and 1⅞ inches, with a 3¾-inch bore length. Motor travel for full range is 6¾ inches. The maximum pitch diameter is 13.1 inches and the minimum is 4.35 inches. Overall dimensions are 14¼ inches long by 13¾ inches O.D. The pulleys are designed with specially curved faces to maintain full belt contact at all speeds and pitch diameters. Each pulley face is independently actuated by its own spring, assuring equal and simultaneous movement of both halves to maintain constant belt alignment. Pulleys are dynamically balanced to .02 oz.-in. for quiet operation and trouble-free service. Alemite fittings provide positive lubrication. *Lovejoy Flexible Coupling Co.*

... FOR YOUR COPY, CIRCLE NO. 301

BUTTERFLY VALVES

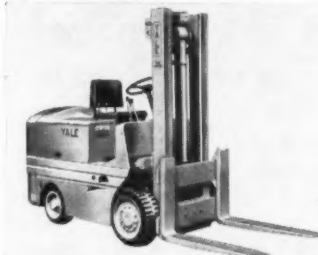
... compact design and light weight

A new line of butterfly valves has been introduced that are rated at 150 pounds water pressure and cover a pipe size range from two to 18 inches. The butterfly valves have nickel-plated cast iron or cast steel bodies with stainless steel trim. For special applications, a variety of alternates is available on many of the figures, including rubber or ceramic lining, monel trim, and aluminum-bronze discs. The valves are compact in design and light in weight. "O" Ring seals provide positive closure in vacuum or pressure service. They require no lubrication. In lever operation, they open or close in a quarter turn. Gear operation is optional in large sizes. *Lunkheimer Co.*

... FOR YOUR COPY, CIRCLE NO. 302

LIFT TRUCK MODIFICATION

... lengthens engine life, protects against dust



A heavy duty dust protection modification for Yale gas powered industrial lift trucks has been designed to reduce maintenance and lengthen engine life in applications where atmospheric contamination

is very severe. The new lift truck modification provides a number of additional safeguards to those supplied in the Yale standard dust protection system. In place of the dual air filter arrangement in standard dust protection modifications, for example, the heavy duty system provides a triple filtering process: dry type pre-cleaner, oil bath cleaner and a final dry type filter. A feature of the new dust protection system is the sealing against contamination of the hydraulic system. The filler cap is a sealed fit and the breather line is run from the third stage of the air filter. The forced crankcase ventilating system, similarly fitted with a sealed filler cap, also is equipped with a breather line off the air filter. A second line directs expelled air into the intake manifold assuring clean air throughout the system. Features from the standard modification used in the heavy duty system include sealed generator and voltage regulator, a heavy duty engine oil filter and an easily demountable floor dust deflector plate. *Yale Materials Handling Div., Yale & Towne Mfg. Co.*

... FOR YOUR COPY, CIRCLE NO. 303

BIG SAVINGS

with STACKER CRANES

Save Space... Save Time... Save Handling Costs

You make savings in various ways with a Cleveland Tramrail Stacker Crane. You increase the storage capacity of a room because you make greater use of its cubic measurement, i.e., materials are stored to greater heights and aisleway widths reduced.

You save time because heavy, awkward loads are picked up, moved and set in place in one fast operation. No time is lost fastening chains, ropes or slings in place, or clamping a grab into position.

You speed handling because a Cleveland Tramrail Stacker Crane will deliver materials from a truck, gondola railroad car or any location on the floor to storage or other areas, directly, with no in-between handling.

You save man-hours because the stacker permits one man alone, operating controls in the cab, to take care of the entire materials handling job without need of floor assistants.

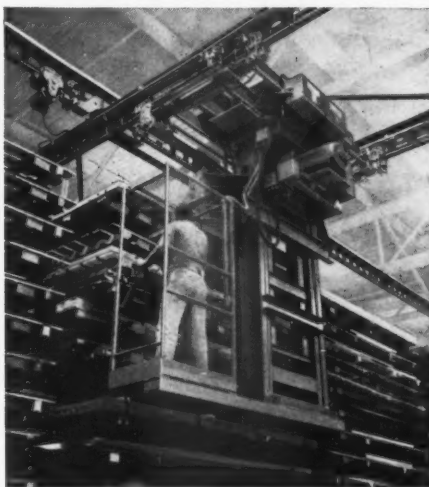
Various designs of Cleveland Tramrail stackers are available to suit practically any situation.

One of several types of Cleveland Tramrail stackers. This unit has a lift of 15'-6", turns 360° clockwise or counterclockwise and handles loads to 3 tons. The mast telescopes and when fork is in high position, the clearance underneath to floor is nearly 8 feet.



CLEVELAND  **TRAMRAIL**

 **Overhead Materials Handling Equipment**



Materials are easily lifted on and off racks. All controls are in the stacker cab which also travels up and down to always provide the operator with a close-up view of the load. This equipment permits fast, easy materials selection. Operator can maintain inventory record in stacker cab.

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advantages

more strength at lower cost—Rigid box structures have demonstrated their economy in many applications. Weight and costs are less than many other common structural steels. Smooth exterior surfaces—Provide handsome exposed structures without excessive expense required in costly false work.

size range

from warehouse stocks—

Rounds from $\frac{3}{16}$ " diameter x .028 wall through 6" OD x .180" wall. Squares from $\frac{3}{8}$ " x $\frac{3}{8}$ " outside x .035" wall through 6" x 6" outside x .250" wall.

Rectangulars from 1" x $\frac{1}{2}$ " outside x .065" wall through 8" x 4" x .250" wall.

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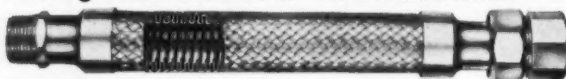
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- Braided for extra strength
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UC3 BRONZE — for temperatures to 400°F.

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Supplied with solid male connectors, forged steel fixed flanges, solid male and union female, or forged steel floating and fixed flanges.

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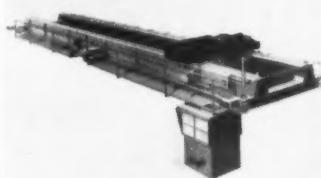
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METAL HOSE CO.

2119 South Kedzie Ave, Chicago 23, Ill.

... for more details, circle No. 33 on Reader Service Postcard

TRAVELING CRANES

... pre-engineered for assembly line construction



A new line of overhead electric traveling cranes for regular industrial service has been announced. Known as the Shaw-Box Series "D" line of cranes they are avail-

able in capacities ranging from 3 to 25 tons, spans to 80 feet, and come equipped for floor or cab operation. Choice of lifts, speeds and electrical currents. These are pre-engineered to permit assembly line construction of cranes from standardized components, production manufactured in quantity. This method provides an interchangeability of parts and enables the builder to achieve considerable savings in production costs which are passed on to the purchaser. In addition, spare parts are immediately available from the factory, avoiding long down-time periods for cranes in service, while waiting for special replacement parts to be manufactured. Maximum use of building or bay area is possible because of compact, low-silhouette trolley design. This permits a crane to be installed extremely close to roof trusses to provide high hook lift and greater utilization of available space beneath the crane. Another distinct advantage is the ability to make very close end approaches of load hook to the building walls, which means nearly every square foot of floor space is accessible to the crane. Shaw-Box Crane & Hoist Div., Manning, Maxwell & Moore, Inc.

... FOR YOUR COPY, CIRCLE NO. 304

SUPER INSULATION

... for rockets and missiles

A major breakthrough in so-called "super insulations" for rocket and missile applications is claimed in the development of a new flexible form of Min-K insulation. Min-K is unique among insulations in that its thermal conductivity is less than the molecular conductivity of still air, traditionally considered the lowest possible. Cutting the cost and time of development and construction of prototypes is a major advantage. The savings are possible through elimination of the time and expense in tooling up for small production runs on test applications. In addition, handling and storage costs and losses are reduced. Flexible Min-K blankets easily wrap around cylinders, cones, or other more involved shapes, or in tape form can be used for spiral winding on duct or pipe. Molded insulations must be specially made for such applications. The insulation is available in blanket or tape form stitched between two faces of glass cloth. Dimensions, in thicknesses of $\frac{1}{8}$, $\frac{3}{16}$, and $\frac{1}{4}$ -inches, are a maximum 30-in. by 30-in. blankets which may be joined together for larger configuration, and a minimum of 1-in. wide tapes made to any length. Flexible Min-K blankets and tapes may be used with laminated systems, and are suitable for bonding, and use with service coatings. The Min-K core material resists vibration and is recommended for steady state applications up to 1400° F, and higher for transient conditions. It weight 16 lbs./cu. ft. average, and may be used to a bend radius as small as $\frac{1}{4}$ -in. Johns-Manville.

... FOR YOUR COPY, CIRCLE NO. 305

LIVE ROLLER CONVEYOR

... cuts accumulation pressure over 70%



A new idea in low accumulation pressure live roller conveyors has been announced. The new conveyor reduces accumulation pressure on commodities to 3½% of commodity weight. The device is a simple, belt driven live roller conveyor that handles a broad range of packages of mixed dimensions and weights without buckling the line of accumulated packages and without causing erratic conveyor performance. When an accumulated line of packages is released on this conveyor, the entire line moves forward at the same instant. No gaps are created and there is no lagging. Belt tracking problems are practically eliminated in the new design. No manual adjustment is ever required of the belt actuators, yet they always provide correct, uniform belt pressure against the rollers. Elimination of the need for actuator and tracking adjustments is expected to give users savings in lower maintenance costs. Currently the controlled pressure conveyor is being used to convey phonograph records, packed meat products, wholesale drugs, and packaged paper products. It needs only 50% of the horsepower normally required for equivalent capacity, accumulating live roller conveyors, and is available in seven widths from 10½" to 38½" between frames. *Standard Conveyor Co.*

... FOR YOUR COPY, CIRCLE NO. 306

TWO-WAY RADIO

... light low-priced industrial unit

A new line of low-priced, lightweight, compact two-way radios has been developed for industrial use. The radios may be used for in-plant vehicles or in cars and trucks traveling between plants. Their small size makes them easy to mount. Fifteen watt models are now in quantity production. They will be marketed under the name "Pacer" and sell for \$419. The product is designed for small local companies where price is important and large manufacturers where the savings per unit can effect substantial economies on large fleet purchases. Designed for operation in low band (27-50 mc.) and high band (150-174 mc.), the units have full-quality VHF-FM audio. These are the two bands most widely sought by commercial firms obtaining licenses from the FCC. The Pacer has 15 tubes and 2 transistors. When the 15-watt unit is "on," battery drain is 4.2 amperes. Special generators and heavy duty batteries are not needed. The control section contains a transistorized power supply adaptable to 12-volt negative or positive ground electrical systems. This eliminates vibrators, getting rid of a major maintenance problem in tubed mobile radio equipment and contributing to greater reliability. The General Electric Pacer model is 4¼ inches high, 7¾ inches wide and 12½ inches long, a total of 412 cubic inches. Lightweight, aluminum construction is used. The Pacer weighs only 10 pounds, including a newly-designed microphone and built-in speaker. *General Electric Co.*

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CUPS • FLANGES • "VEE" 'S
"U" 'S • GASKETS • WASHERS

Searle Leather & Packing Co.

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Los Angeles 32, California

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ELECTROLIFT WORM-DRIVE HOISTS

Adding a hoist or replacing a system? It will pay you to investigate the ElectroLift worm-drive unit first.

Extremely simple to operate, ElectroLift hoists in ¼ to 10-ton capacities feature enclosed worm gearing and motor for clean, quiet operation... long, trouble-free operating life, thanks to quality components and materials... compactness for operation in close headroom... automatic or manual actuation... and safe, sure braking action.

For the model, speed and operation best suited to your needs, consult your classified directory for the nearest ElectroLift representative.

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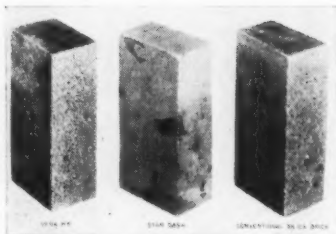
Clifton, N. J.

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NEW REFRACTORIES

... resist spalling and cracking

Two new refractories have been developed, which have a high degree of spalling resistance. These specialized silica refractories are considered an important advance in increasing the service life of various types of industrial furnaces. Laboratory tests of three silica bricks, one of which was a conventional brick, indicate that temperatures which break up conventional silica brick, do not cause cracking or spalling in the two specialized silica bricks (see photo). In one open hearth shop, for example, the application of Vega HP has increased average roof life from 100 to 250 heats. In a steel foundry with average electric furnace roof life of 75 to 100 heats, Star Dash was used in a furnace that lasted 152 heats. The marked improvement was attributed to increased spalling resistance. In addition to hot-patching open hearth and electric furnace roofs, the improved spalling resistance of these specialized silica refractories suggest other uses. These include glass-making furnaces, crowns and other areas of tunnel kilns, building piers of enameling furnaces, copper anode furnace roofs, wirebar furnaces, acid-operated iron cupolas, zinc recovery rotary kilns, carbon baking furnaces of pit or ring type, beehive oven crowns, zinc retort shells in furnaces of special design, heating furnace roofs and soaking pits. *Harbison-Walker Refractories Co.*



... FOR YOUR COPY, CIRCLE NO. 308

LOW MAINTENANCE PLYWOOD

... is result of permanent acrylic 'paint job'

New exterior plywood with a permanently colored acrylic overlay for attractive low-maintenance building exteriors is the latest result of extensive research aimed at cutting building costs. Designed for facias, feature walls or entire buildings, the tough new double-overlaid panels are being marketed in initial heat-bonded acrylic colors of white, red, blue and green. Other colors are planned. Initial marketing follows extensive laboratory and field testing, including use as highway signs in all types of weather extremes, and for exterior building walls where a permanent factory finish and competitive initial cost were factors. Said to cost less and last longer than metal, and easily worked with standard woodworking tools, the new paneling can be either a curtain wall material or an integral structural part of the building utilizing Douglas Fir plywood's high weight-strength factor. The acrylic overlay has undergone extensive weather, abrasion, boiling water, checking and chemical solution tests. The panels require no on-the-job painting or other surface treatment. The new material is being manufactured in a wide variety of sizes and thicknesses. There is a choice of acrylic on both sides, or acrylic face with a back of high density natural or black overlay, or A or B fir. It is available in widths of 30, 36, 48, and 60 inches, and in lengths of 72, 84, 96, 108 and 120 inches with much larger sizes available in scarfed panels. Stand-

ard thicknesses, making the material suitable for almost every building and signing job, are 5/16, 3/8, 1/2, 5/8 and 3/4-inch. All panels also are edge sealed at the factory unless ordered otherwise. *Georgia Pacific Corp.*

... FOR YOUR COPY, CIRCLE NO. 309

NEOPRENE ADHESIVE

... for general purpose bonding

A new general purpose neoprene contact adhesive for bonding a wide variety of materials, giving bonds that have high peel strength, remain permanently strong and resilient, and have good water resistance has been developed. The new adhesive called D-239 is designed for bonding supported vinyl fabrics to metal, wood and composition bases; thin gauge metals or foils to wood, cement asbestos board, hard board and composition bases; and the new fabric backed urethane sheets, to metal, wood and composition bases. It is a yellow air-drying solvent adhesive with synthetic rubber base. The adhesive has a consistency of thin syrup and may be applied by brush, spray or roller coater. D-239 has good resistance to fatigue or "dead load" and excellent aging properties. The adhesive is available in one-half pint cans, 48 to the carton; one pint cans, one quart cans, one gallon cans, five gallon pails and 55 gallon drums. *Armstrong Cork Co.*

... FOR YOUR COPY, CIRCLE NO. 310

CLEANING COMPOUNDS

... specially developed for ultrasonic cleaners



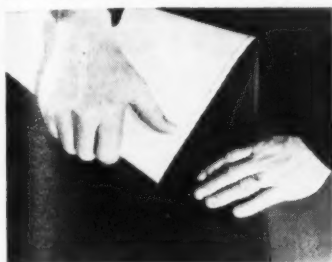
Three specialized cleaning compounds have been developed to cover a wide range of applications for use in ultrasonic cleaning equipment. The first, L & R #222, is a waterless,

ammonia-free solution that has been especially formulated for use in cleaning operations where the use of ammonia would not be chemically desirable. It is able to impart, to copper, brass and steel parts, a brilliance and lustre that was previously possible only with the use of ammoniated cleaners. Since it contains no volatile ammonia, the solution does not lose its cleaning properties by dissipation in the atmosphere. L & R #112, (ammoniated), is ideal for the removal of gummed oil and grease, oil-soluble cutting oils, asphalt and tar, carbonized residues, sulphides, waxes, fluxes, ordinary oil and fingerprints and a wide variety of other foreign particles from precision metal parts, ferrous and non-ferrous bearings, instrument components and assemblies, meters, gyros, printed circuits, ball points, transistors, etc. The third, L & R Hydro-Sonic Cleaning Solution Concentrate, when diluted with seven pints of water, will produce a gallon of water base ultrasonic cleaning solution capable of instantly removing all water-soluble soils, fingerprints, lapping compounds and cutting oils, waxes, rouges and tripoli from metal, glass and plastic. It is completely rinsable in water. *L & R Manufacturing Co.*

... FOR YOUR COPY, CIRCLE NO. 311

FABRIC BACKED URETHANE

... protects chutes against abrasion



A fabric backed urethane specially designed to be used as a liner for handling grain, ore slurries, coal, coke, rock, sand and gravel, glass and other abrasive materials has been developed.

Called Armstrong

PO-663, the new material provides maximum abrasion resistance, reduces cost by protecting expensive chutes and equipment, has longer life, allows use of thinner gauge materials, reduces maintenance cost, and can be easily installed by cementing or bolting. In addition to having the outstanding durability, characteristic of urethane systems, the fabric backing provides ease of installation with conventional rubber-resin adhesives. PO-663 is available in standard stock sheet sizes ranging from 12 x 20 inches to 96 x 40 inches in 1/16, 1/8 and 1/4-inch gauges. Special sizes and gauges are available on request. As in the case with other products made from urethanes, the fabric backed material combines such qualities as high tensile strength and abrasion resistance with elasticity and resilience in varying degrees to satisfy individual needs. *Industrial Div., Armstrong Cork Co.*

... FOR YOUR COPY, CIRCLE NO. 312

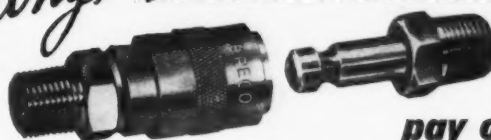
TAPPING UNIT FOR PRESS

... can be built into progressive dies

A tapping unit that can be built into progressive dies in any position has been developed. Designed to eliminate extra tapping operations in parts, maximum tap size is 3/8" with minimum center distance between tap holes of 2 1/2". Actual production has proved 75 strokes per minute tapping 4 threads in the work piece. Maximum tap stroke is 3/8" although stroke may be increased if die design requires. The unit is hinged so that taps may be quickly changed in less than one minute. Mounting may be altered to suit most die requirements. Important is the compact hydraulic unit with motor, solenoid valves and precision controls developed especially for use with the method. *Laughter Corp.*

... FOR YOUR COPY, CIRCLE NO. 313

why. QUICK DISCONNECTS



pay off

Because Quick Disconnects are the **fastest, easiest** and **most economical** means of making or breaking a connection. They pay for themselves by reducing costly set-up time and maintenance costs.

A simple, one-hand operation—**connect or disconnect lines instantly**. No turning or twisting. Eliminates costly "wrench type" connections. Step-up production.

The Series "D" (2D & 4D) Couplings are **interchangeable** with all popular makes. A small, rugged lightweight coupling for air, liquids and gases. Designed for instrumentation, aircraft and industrial uses. Construction and performance meets Military Specification MIL-C-4109A.

Patented **PUSHOMATIC** locking forms a positive high-pressure and leak-proof connection. Buna N seals assure positive sealing. Shut-off valve in socket stops the flow when disconnected. Working Pressures to 7500 PSI.

The Series "D" has these **advantages**

Automatic Locking	360° Swivel action
One-hand Operation	Integral shut-off valve
Interchangeability	

Four end types in pipe sizes 1/8" through 3/4" N. P. T.

Write for Interchangeable Coupling Bulletin 1500.

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DynaV

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Everyone is going Dyna-V! Thousands of installations reveal that Dyna-V performance is *even better* than promised when we first introduced this new compact drive. In medium and high horsepower ranges, savings go as high as 30%!

Dyna-V can handle 3 times as much power in the same space. Dyna-V Sheaves decrease shaft overhang, increase bearing life. And Dyna-V Belts possess *all* premium qualities. Conditions requiring static conductivity or resistance to oil, moisture and heat are met by Dyna-V's one grade—the finest. Ask your Dodge Distributor, or write us for complete drive bulletin. Dyna-V Drives are available for capacities from 1 to 1500 hp.

Dodge Manufacturing Corporation, 6600 Union St., Mishawaka, Ind.

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of Mishawaka, Ind.



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Western MANUFACTURING

THE INDUSTRIAL WEST . . . ON ITS WAY

NEWS OF PLANTS — PRODUCTION — DISTRIBUTION — PERSONNEL

Western Electric Salt Lake Facility Underway

SALT LAKE CITY — Groundbreaking ceremonies last month marked the start of construction of Western Electric Co.'s new \$2,168,000 facility at 1850 W. 21st South in the Industrial Center, said *Arthur J. Boesch*, Denver, WE's manager, who will also supervise the Salt Lake operation.

The building, containing over 100,000 sq. ft., will house WE's telephone distribution center and will be a supply warehouse for communications equipment used by the Mountain States Telephone Co. in serving Bell Telephone System customers in Utah and most of Idaho and Montana.

The center will also have facilities for repairing and reconditioning telephones, teletypewriters and other apparatus. Approximately 100 employees will be needed.

Chemical, Metal Testing Laboratory for Denver

DENVER — A new \$150,000 laboratory for chemical and metallurgical testing and research will be built in Jefferson County at W. 46th Ave. and Indiana St. and will be operated by H. L. Hazen Research, Inc.

The laboratory will have facilities for assaying various metals and for examination and development of metallic and chemical processes in ore treatment, according to *Carl D. Broadbent*, executive assistant for the parent firm, Susquehanna Western, Inc., 777 Grant St., Denver.

Branson Instruments Moves To Larger Valley Facility

VAN NUYS, CALIF. — Branson Instruments Inc., producers of a wide range of ultrasonic cleaning and test equipment is moving into new and expanded facilities located at 5925 Noble Ave. Announcement was made for the firm by *Kenneth Hayes*.

Makes Own Shovel for Jorgensen Groundbreak



After observing an automatic flamecutting machine making symbolic shovels from steel plate, Mayor Clifford E. Rishell, Oakland, Calif., uses one to break ground for a new office building at Earle M. Jorgensen Co., steel and aluminum service center. Participants are, left to right, Guy Warren, chairman Oakland Chamber of Commerce New Industries Committee; Edgar Buttner, Chamber president; Earle Jorgensen, president, and Paul Childs, Oakland district manager, Earle M. Jorgensen Co.

OAKLAND, CALIF. — The Earle M. Jorgensen Co., distributors of steel and aluminum, began construction last month on a new 14,000 sq. ft. office building at the Oakland service center.

Designed by Welton Becket & Associates, the new facility will house the company's growing organization of sales and office personnel as well as administration of new branch plants at Seattle and Honolulu.

Last year the company built a 42,000 sq. ft. bay for storage and processing of plates and sheets. The new bay cost over \$1,000,000 and increased warehouse space by 50 per cent.

At a tour preceding the ground-breaking, President *Earle Jorgensen* said the company expects to bring sales to \$60,000,000 in 1961, an increase of \$10,000,000 over 1960.

Shell Oil Building New Asphalt Process Plant

MARTINEZ, CALIF. — A new plant for the processing of asphalt products will be built at Shell Oil Co.'s Martinez refinery, *R. S. Douglass*, refinery manager, announced that the project, which will cost in excess of \$1,000,000 will make possible the production of a wider variety of asphalt materials for highway paving, roofing manufacture, and other uses as well as increase the volume of these materials now manufactured at Martinez.

Douglass said that the processing plant proper, known as a vacuum flasher, will be constructed by the Bechtel Corp. of San Francisco, who also are handling the detailed engineering based upon designs furnished by Shell.

Preliminary work, largely in the nature of site clearance, is underway, and it is expected to have the new plant in operation in October.

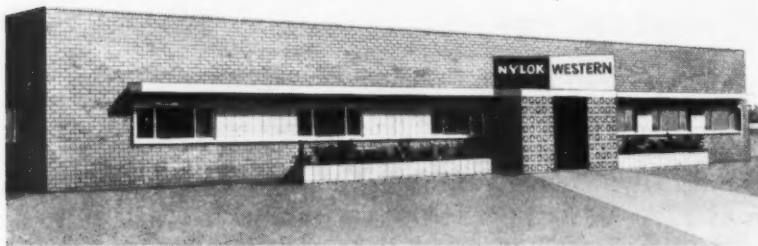
United Control Corp. Occupies New Plant

BELLEVUE, WASH. — The United Control Corp. has occupied its new \$2,000,000 facility in Overlake Industrial Park here and is now operating at full capacity.

The announcement was made less than two weeks after United Control began transferring its engineering, production and administrative operations from 12 buildings in Seattle's University district to the new plant. The move was planned so that no department was out of commission for more than one day, a company spokesman said. The firm employs 800 persons and the move required 140 van loads of machine tools, equipment, work benches and other equipment.

Located on a 30-acre site, the new plant has an area of 136,000 sq. ft. on one level. Overlake is a planned community for light industrial and research facilities.

Nylok-Western Occupies New Facility at Gardena



This is the modern new plant of Nylok-Western, division of Nylok Corp., Paramus, N.J., fastener manufacturer. The facility is built on 40,000 sq. ft. of land providing ample room for future expansion.

GARDENA, CALIF.—Containing almost three times as much space as their former plant at 133 Penn St., El Segundo, Nylok-Western moved last month into new facilities at Alondra Industrial Park, 16222 South Maple, Gardena.

B. B. Steele, vice president, said the new plant is completely made of steel beam construction and features several types of modern brick for its exterior.



John H. Heppy

Comprising 3,000 sq. ft. of office space and 7,000 sq. ft. of manufacturing area, Steele said the additional manufacturer area will allow the installation of automated equipment so the company can increase production of their line of self-locking fasteners.

John H. Heppy has been named manager of the new plant. He comes to the West Coast after spending six years with the parent company and in his new capacity, will be responsible for the integration of new automated equipment, production control and the general management of the factory.

MacLeod-Young Plastics Opens Plant at Fresno

FRESNO, CALIF.—A new plant has been opened here at 1558 North Sierra Ave. Headed by G. F. MacLeod, the company, MacLeod-Young Plastics, Inc., manufactures injection molded thermo plastic products for industrial and commercial uses, spray fabricated fiberglass plastic products for decorative uses and plastic repair and molding materials.

Southland Fabricators Form Steel Council

COMPTON, CALIF.—Seventeen independent Southland steel fabricators and steel service centers have announced formation of the Southern California Steel Council, with the primary objective "promotion of the use of steel, and revitalization of the selling efforts of the steel industry."

The founders elected Morris Rohrlack, manager of General Pipe & Supply Co., chairman of the executive committee, and Harry Ross, president of Ross-Carter Corp, vice chairman.

Elected to the executive committee were, James McLaughlin, vice president, Triangle Steel & Supply Co.; Winford Rawlins, president, Central Industrial Engineering, and Glenn Bustrum, vice president, Junior Steel Co.

Elk Lumber Building \$1,000,000 Facility

MEDFORD, ORE.—The Elk Lumber Co. has announced that its new plywood plant is scheduled to be in full production in about a year. Currently under construction, the site is located adjacent to Elk Lumber's sawmill just north of Medford.

Vice president and general manager, George C. Flanagan, said a building that formerly housed the firm's stud-mill is being converted and expanded to handle the plywood operation. The expanded building will be 600 ft. long and 280 ft. wide. Total investment in the new plant is in excess of \$1,000,000.

The plywood plant will operate two shifts a day, Flanagan said, and will have a production capacity of 75,000,000 sq. ft. of plywood a year.

G.E. Forms "Atomic" Dept. Aiming at Future Market

SAN JOSE, CALIF.—General Electric has established a new electronics operation here aimed at the fast-growing nuclear instrumentation and systems market.

The organization has been set up as a product section of the Co.'s Atomic Power Equipment Department (APED), according to General Manager George White.

The new section, called Nuclear Electronic Products Section (NEPS), will be an integrated business operation responsible for the development, design, manufacture and marketing of electronic systems and components for the control of nuclear reactors and other specialized instrumentation.

NEPS, which will have its own manufacturing, marketing and development operations, will occupy 10,000 sq. ft. in existing buildings at APED's 57-acre headquarters site here.

A new 2,800 sq. ft. instrument production facility for the NEPS section is now under construction.

J. R. Wolcott, APED's manager, manufacturing, has been named acting manager of the new product section, which will employ about 100 persons. Personnel for the new organization have been transferred from the various electronics groups formerly attached to APED's engineering, manufacturing and marketing sections.

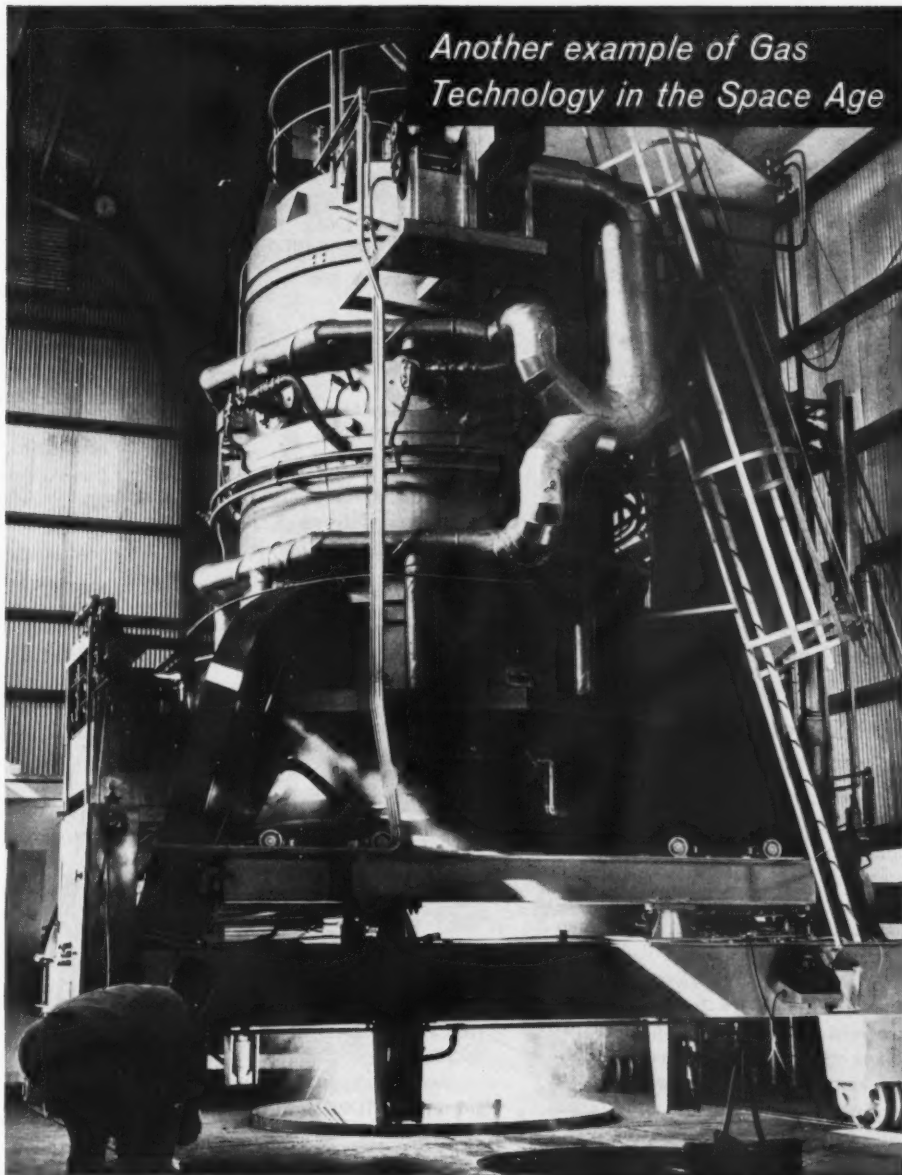
According to White, NEPS was formed because "the nuclear electronics field has shown a marked growth, and it appeared desirable to form an integrated organization in order to exploit more fully this growth." Industry surveys have shown that the current nuclear electronics market is about \$60,000,000 annually, but this is expected to increase to \$200,000,000 annually by 1970.

Santiam Lumber Begins Lebanon Mill Operations

PORTLAND—The Santiam Lumber Co. began operations at its new sheathing plywood mill at Lebanon this month, according to an announcement from Richard E. Davis, Santiam's general sales manager.

The plant, built to produce more than 70 million feet of interior plywood sheathing annually, will employ 80 people and create a monthly payroll of \$30,000, Davis said.

*Another example of Gas
Technology in the Space Age*



Built by Natural Gas Equipment Inc., of Pasadena, California, this big Gantry furnace is basically a combination of two Lee Wilson bell furnaces.

Gantry furnace built in 90 days to heat-treat Polaris Missile parts

Three months after construction began, precise, controllable Gas Heat went to work in this mobile Gantry furnace. Today it is being used to heat treat component parts for America's submarine-launched Polaris Missile. The heat-treating process prepares the parts for the terrible pressures of high-speed, high-altitude flight.

This 32-foot-high giant—first and largest of its kind in the West when completed—has three separate temperature zones, each individually controlled. This enables missile sections of varying size, shape, and thickness to be heat-treated simultaneously. Operational temperatures are normally maintained at 1,600° F—with maximum variation of plus or minus 10° F.

This Gantry furnace has better temperature control and is more economical to operate and maintain. Initial building costs, too, were considerably less because of the decision to power with Gas. And the versatile Gantry can be used for other types of controlled-temperature manufacturing. It's mounted on wheels which run on rails to permit operation over either the loading pit or the oil quench tank. Final price tag ran about \$200,000.

Taking the lead from Norris-Thermador, many other Western manufacturers are now installing Gas-fired Gantry furnaces to accomplish close temperature-control jobs at reduced costs. Why don't you investigate the exclusive advantages of Gas.

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serves best...costs less

SOUTHERN CALIFORNIA GAS COMPANY
SOUTHERN COUNTIES GAS COMPANY

... for more details, circle No. 40 on Reader Service Postcard

Hastings Plastics Occupies Enlarged Facilities



SANTA MONICA, CALIF. — Hastings Plastics Inc., manufacturer and distributor of low pressure plastics, fiberglass reinforcements and supplies has expanded to a larger plant and warehouse at 1704 Colorado Ave.

According to *Norry Hastings*, president, the move was prompted by re-

cent signing of contracts appointing Hastings a distributor for Union Carbide Plastics, Pittsburgh Plate Glass Co. and Coast Manufacturing and Supply Co. The firm is a stocking supplier for plastics materials used by Western missile, airframe, marine, electronics and building industries.

AMHS Slates Fork Truck Driver Training Program

LOS ANGELES — Scheduled in place of the annual American Material Handling Society fork truck rodeo this year will be a driver training course on May 11 and 12 at Southern California Gas Co., Lakewood and Slauson Ave., Los Angeles.

According to *C. R. Bloomquist*, program chairman, fee for the two day program is \$15.00 and includes two luncheons. The course, endorsed by the National Safety Council, will offer instruction in safe and efficient fork truck operation, tests for driver aptitude including vision, depth perception and color blindness, and obstacle courses to test ability in all general types of fork truck operation.

Each student completing the course will receive a certificate of merit, *Bloomquist* concluded.

Western Metal Decorating Builds Strip Paint Line

EL SEGUNDO, CALIF. — Western Metal Decorating Co. announces installation of the first continuous horizontal steel and aluminum treating and painting line in Southern California that offers both sheet and coil facilities.

Located at Cucamonga, Calif., the line went into operation on April 1 and represents an investment in excess

of \$150,000. The firm has been producing tinplate and blackplate for food processing industries in the Los Angeles and San Francisco areas and has also supplied metal to firms engaged in manufacturing of metal cabinetry, bottle caps, signs and tubing.

Over 270-ft. long, the line operates at over 80 fpm and is capable of cleaning, treating and painting more than seven tons of steel per hour. Finishes applied to metal include vinyls, acrylics, polyesters, alkyds and other decorative coatings. The new equipment was manufactured by Ross-Waldrone, WMDCO, and other local suppliers.

LA Purchasing Agents Report Production Up

LOS ANGELES — According to the most recent business survey issued by the Purchasing Agents' Assn. of Los Angeles, strong showings were made recently by two major business indicators, production and new orders.

A third area, employment, showed some improvement for the first time this year. Prices were found to be unchanged.

A total of 57% of purchasing agents reported production upturn in the Los Angeles area in the past 30 days. Increases in new orders were reported by 49% and 24% said employment had increased.

Chamber Says Industry Needs Diversification

LOS ANGELES — The growing need for diversification of Southland industry is being spotlighted by a committee of specialists at the Los Angeles Chamber of Commerce who recently outlined their efforts to develop strong industrial units in this area that are not dependent on defense contracts and other Federal spending.

During a trade press conference, committeemen took a hard look at defense-based industry that is confronted with contracts calling for less hardware, technological displacement of workers whose skills are not easily transferable from one industry to another and to the small supplier and job shop who depends largely on the prime contractor.

The Chamber's diversification committee has embarked on an aggressive and comprehensive program to utilize labor displaced from defense industries.

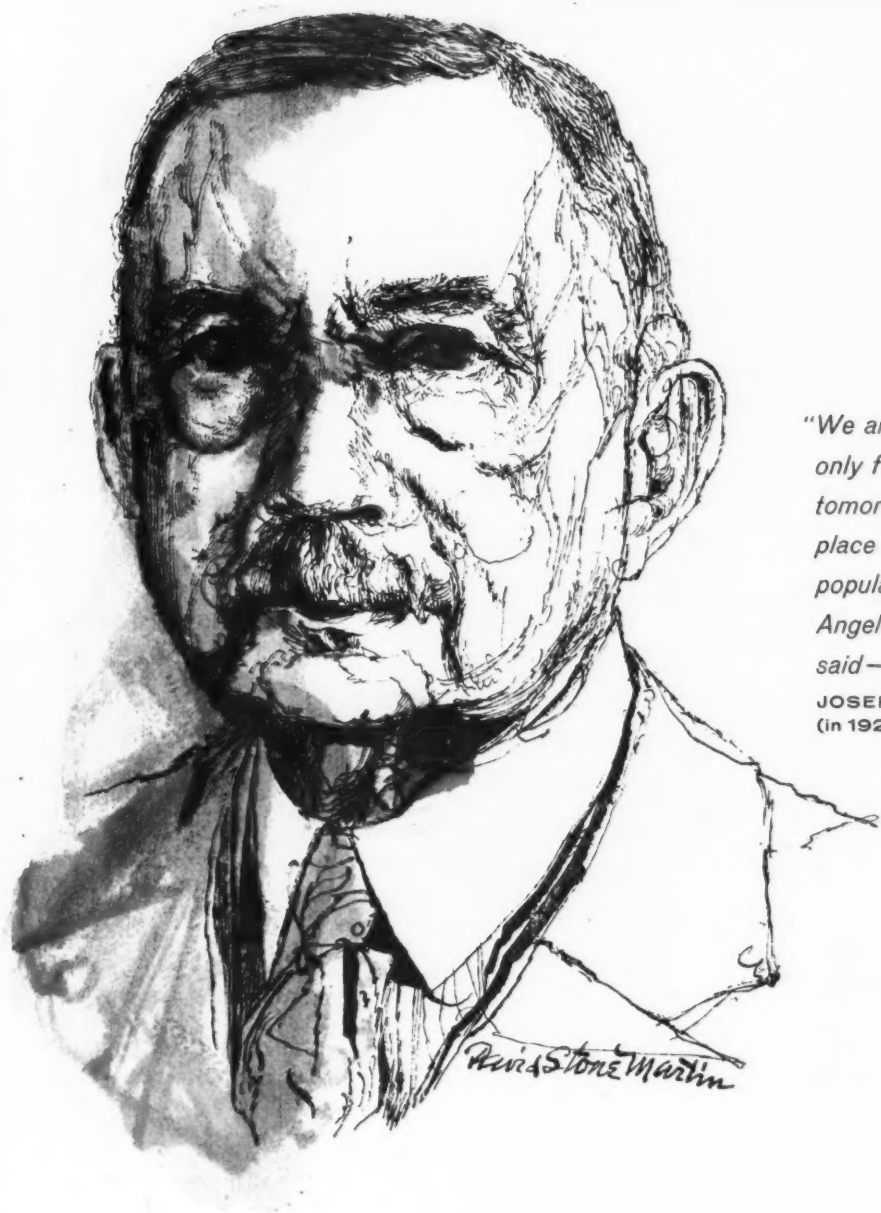
Committeemen led by *Vernon A. Walker* are working with *Don Hanauer* and *Pete Sanford* of the Chamber Domestic Trade Department in a program designed to inform manufacturing management of their clearing house for new product ideas on file at the Chamber and brought there by inventors and other manufacturers who have the idea, but perhaps are without the funds or facilities needed to make them.

Many of these new products are beamed to the consumer market, considered by the committee to be the greatest outlet for Western made goods. Spokesmen pointed out that enormous quantities of items are shipped into this area for "domestic" consumption from manufacturers outside of the 13 Western states. Many of these things could be made here at a profit, they claim.

Epps Installs Equipment To Expand Tube Size Range

LOS ANGELES — *Bernard S. Epps*, president of Epps Industries, Inc. announces installation of production equipment to produce new sizes of welded steel tubing.

Epps said 1½-in. round in gauges from .035-in. to .090-in., and ¾-in. square, gauges .047-in. through .083-in. are now in production. Epps is producing welded steel tubing for distribution in the Western region.



*"We are building not
only for today but for
tomorrow...no other
place will be as densely
populated as the Los
Angeles area,"
said —*

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(in 1921)

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HEAD OFFICE—LOS ANGELES

... for more details, circle No. 41 on Reader Service Postcard

New Engineering Offices for Semco, Sweet, Mayers

LOS ANGELES — The consulting industrial engineering firm of Semco, Sweet & Mayers announces a move to new facilities at 2835 Gilroy St.

Headquartering in Los Angeles, the firm provides consulting engineering services to Western industrial and service industries who are modernizing or building new facilities. Plant layout, material handling, flow, order systems and warehousing plans are a specialty of the firm.

Callery Chemical Moves to Larger Facilities

LOS ANGELES — Callery Chemical Co. moved its Encino, Calif. laboratories and offices to larger quarters at 15537 Lanark St., Van Nuys, Calif., where 5000 sq. ft. of laboratory space will be utilized.

The facility was established in July, 1960 as part of the company's plan to diversify its research and development effort, particularly in the field of energy storage and the non-prolusive aspects of space technology.

Chromizing Consolidates Hawthorne Operations

HAWTHORNE, CALIF. — Concentrating all Los Angeles area activities into one 15,000 sq. ft. plant at 12536 Chadron Ave. is Chromizing Corp., subsidiary of Chromalloy Corp. Formerly three separate operations were conducted in the Vernon, Calif. area.

The firm, headed by Maurice R. Commanday, president, specializes in high heat resistant coatings for aircraft, missile and space applications. Chromalloy has developed patented methods of diffusing chromium and other elements into steels, super alloys and refractory metals to offer high oxidation resistance at extreme operating temperatures.

Latest outlet for the firm's specialty is an automotive smog device.

Extend Industrial Smog Rule 62 One Month More

LOS ANGELES — In a hotly contested fight, the Los Angeles Board of Supervisors has extended Smog Rule 62, that prohibits burning of high sulphur content fuel oil by industry, so that it will be effective from April 15 to November 15 each year, beginning in 1961.

The ruling was laid down over strong protests of the Western Oil and Gas Assn. The Air Pollution Control District presented testimony highlighted by statements of local doctors who claimed that smog was injurious to health. Other APCD testimony indicated that if the Smog rule were modified, other industries affected by APCD rulings would seek relief and this "could mean breakdown of the air pollution control system in the county."

Benjamin Metals Handles Alcoa Aluminum Products

LOS ANGELES — Alcoa has named Benjamin Metals Co. as a distributor of aluminum wire, rod and bar, structurals, screw machine stock and tool and jig plate, according to C. R. Boyle, Alcoa Los Angeles district sales manager.

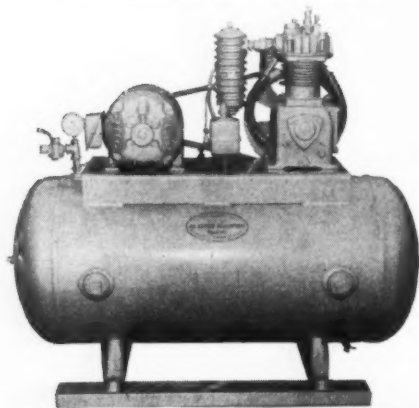
Jack Benjamin, president of the service center firm, reports that 900 items will be available on an off the shelf basis. Benjamin general offices and service center is at 1829 W. El Segundo Blvd., Compton, with sales representatives in Seattle, San Francisco, and Phoenix.

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International Paper Completes Bag Plant



Closeup of roof construction at new International Paper Co. plant shows tarred insulation being nailed to a plywood roof deck. Insulation was covered with three layers of 15-pound asphalt roof felt topped by 95-pound mineral cap sheet. The entire roof was then sprayed with Permalume.

BELL GARDENS, CALIF. — International Paper Co. has completed a new paper bag plant near Los Angeles made primarily of wood and featuring earthquake resistant construction.

The 52,000 sq. ft. facility features 80-ft. clear span trusses with glue laminated bottom chords. These, together with 6-ft. by 14-ft. purlins and 2-ft. by 4-ft. sub-purlins and a ½-in. plywood diaphragm roof provide flexibility and resistance to stress caused by earth tremors.

The building employs high density overlaid plywood exterior walls for cleanliness and low maintenance costs, aluminum covered plywood walls for adhesive mixing and storage areas, and a variety of decorative woods.

The wood diaphragm roof was applied by Berkeley Plywood. The one-story plant is equipped to produce a wide range of bags and sacks, bleached and unbleached wrapping and special purpose papers.

Outstanding Authority on Power Transmission Dies

SAN FRANCISCO — Lee O. Carroll, Pacific Coast manager since 1944 for Dodge Manufacturing Corp. of Mishawaka, Ind., died March 3 of a heart attack at the Portland, Ore., airport, where he was enroute to his San Francisco headquarters from a sales trip.

An outstanding authority on power transmission equipment in the West, Carroll, 61, had been associated with Dodge for over 35 years. He is survived by Mrs. Carroll who lives in Berkeley, Calif., and three sons.

MEET MR. HAND-SAVER

NEW **Snap-on** OPEN-END WRENCH with comfort-grip handle



Give your hands a break. Get these SNAP-ON open-end wrenches with new, extra-comfortable, smoothly rounded handles that let you put on the pressure. Check all the features that make SNAP-ON the most preferred wrenches in the business . . . the lowest cost wrenches in the long run. Then order a set from your SNAP-ON representative.

Sure Fit — SNAP-ON open-end wrenches are coined and broached to close tolerances. Jaws fit snugly without slipping.

Convenient — Head and opening set at 15° angle to handle. In close quarters, tool can be turned over and a new grip taken to speed work.

Load-proportioned Handle — Wrenches are engineered so that handle length is proportioned to load wrench in handling. And SNAP-ON adds a big safety margin for extra protection.

Multi-use — Two-size opening on each wrench.

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Balanced Design — Size, weight and length are correlated to give you the "feel right" balance that's a trademark of SNAP-ON wrenches.

Close-quarter Jaws — A SNAP-ON open-end has narrow, tapering, pear-shaped jaws that can reach nuts that are tucked into tight quarters.

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. . . for more details, circle No. 43 on Reader Service Postcard

Hawaiian Metal Fabricators Learn Latest in Welding



HONOLULU—More than 100 men representing the metal fabricating industry in Hawaii, some coming by air from as far away as 100 miles, attended demonstrations in Honolulu recently of new welding and cutting methods. The demonstrations were conducted by *Lee Reay*, left, sales promotion manager for Linde Co.,

Div. of Union Carbide Corp., San Francisco, and *James F. Stacy* of GasprO.

Sponsored by GasprO, Ltd. at their new facility in Honolulu, processes demonstrated, some for the first time in Hawaii, were Sigma short arc welding of carbon steel and Sigma spray arc welding of aluminum.

Electronic Blending at Union Oil Co. Refinery

LOS ANGELES — Electronic blending of gasoline, jet fuels, and other petroleum products with "essentially absolute accuracy" began operation last month at Union Oil Co.'s refinery here.

First of its kind, the new \$1,500,000 electronic blender uses more than 5,000 transistors in its computer-controller system. Union's engineers have been working for two years on the design and construction of the blender. The company has patents pending on the unique control principle.

The unit, operating from a central point, automatically controls valves on storage tanks a mile away. Drawing from these, it can blend in precise ratios as many as 10 different gasoline stocks with five additives plus tetraethyl lead to produce a continuous stream of finished gasoline at rates up to 5,000 barrels an hour.

This system is in contrast to the time-consuming, almost universally used "batch method," whereby individual gasoline components are measured into tanks and stirred mechanically until they blend.

A companion unit, which can be operated simultaneously, blends turbine and diesel fuels at rates up to 3500 barrels an hour.

American Kylon Begins Operations in Denver

DENVER — The American Kylon Corp., whose new plant at 950 W. 48th Ave. began operation last month, will manufacture more than 20 new resin-derived products in the building material field.

C. P. Gilkison, who is moving here from Chicago where he has spent 25 years in allied fields, is president and *Arthur D. Marr*, Denver, is vice president.

Many of the firm's products will utilize techniques developed and perfected by *Clement Dippel*, president of Controls Research Corp. of Skokie, Ill.

The facility will have an initial 10,000 sq. ft. and a beginning payroll of 15 to 20.

Handling the distribution in Colorado will be a newly created company, Olympic Enterprises, 1123 Delaware St., headed by *Robert McCloskey*.



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Carborundum Co. Occupies New \$1,500,000 Facility

LOS ANGELES — Consolidating their former separate office and warehouse facilities in the Los Angeles area, the Carborundum Co., abrasive manufacturer, and its subsidiary, Pacific Abrasive Supply Co., have moved their offices and stocks to a new 75,000 sq. ft. Abrasive Service Center at 2240 South Yates Ave., Los Angeles.

The new center houses a \$1,500,000 inventory of abrasives and offers complete grinding and finishing systems.



Harry M. Bayley

Harry M. Bayley, vice president and general manager of Pacific Abrasive Supply Co., said inventories include a complete line of abrasives running the full range of bonded abrasives such as grinding wheels, abrasive grains and powders, tumbling media and compounds, coated abrasive sheets, rolls, discs and belts. The center also stocks cutting tools, coolants, super refractories, electrical components, barrel finishing machines and abrasive belt machines.

Equipped with 30 machines and their supporting facilities, the Center is organized into three departments: Grinding Wheel Dept., Abrasive Belt and Machine Dept., and Barrel Finishing Dept. The center also provides an educational and training facility on scientific grinding and finishing systems.

United Pacific Aluminum Acquired by Cerro Corp.

LOS ANGELES — Cerro Corp. of New York formally completed the acquisition of United Pacific Aluminum Corp., here, according to Richard H. Lewin, Cerro vice president.

Cerro acquired the assets of United Pacific in return for 100,000 shares of Cerro common stock. Each United Pacific stockholder will receive approximately one share of Cerro common for each 4.77 shares of United Pacific.

United Pacific is a producer of painted aluminum strip. Lewin said that United would operate as a division of Cerro and that there would be no change in management.

Micro Switch Appoints Peck-Lewis Distributor

LOS ANGELES—Micro Switch, a division of Minneapolis-Honeywell Regulator Co. of Freeport, Ill., has announced the appointment of Peck-Lewis Corp., 4436 Long Beach Ave. East, Los Angeles, as a distributor of their electrical and electro-pneumatic safety trip controls.

The controls are used on punch presses, press brakes, paper cutters and special power operated machines requiring two hands control with single stroke.

Fluorescent Lighting Fixture Company Sold

PHOENIX—Grayco Products, 246 So. 27th St., manufacturers of fluorescent lighting fixtures, has been purchased by Robert A. Maisner.

Maisner bought the company from Mrs. Elizabeth Levee, widow of Sam Levee who founded the lighting concern in 1952. The business occupies a 10,000 sq. ft. plant and employs 12 persons.

Maisner formerly was vice president and general manager of Chicago Aerial Industries, Chicago.

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Puget Sound Fabricators Complete Dow Project



Trucked from Seattle to near Vancouver, B. C. recently was this 60-ft. reactor tower, one of last of 18 vessels custom-fabricated by Puget Sound Fabricators, Seattle, for the new Dow Chemical Co. of Canada plant. Onlookers, from left, George Taylor, vice president production, Puget Sound Fabricators; James Wallington, PSF general superintendent; and Art Siebert, Canadian Bechtel, Ltd., contractors for the plant construction.

SEATTLE—Truckloads of tall towers custom-fabricated by Puget Sound Fabricators, Inc., here, are moving into the site of a new Dow Chemical Co. of Canada plant, now in final stages of completion on Tilbury Island near Vancouver, B. C.

Construction on the new plant, scheduled for completion this month, is under Canadian Bechtel, Ltd., an affiliate of Bechtel Corp., San Francisco. The initial project will total about \$3,500,000, with ultimate future expansion projected to a \$20,000,000 facility.

The giant tower shown is typical of the tanks and vessels supplied by Puget Sound Fabricators to equip the plant, which will manufacture high-grade phenol, an intermediate chemical used in plastics, weed killers, pharmaceuticals and varnishes.

Eighteen pieces of specialized plant and process equipment, including reactor towers, columns, horizontal storage tanks, measuring decanters and feed tanks were fabricated by Puget Sound. Most of the vessels were fabricated of stainless steel in thicknesses from 3/16" to 9/16".

PG&E to Add Geothermal Unit at Sonoma Geysers

SAN FRANCISCO — Pacific Gas & Electric Co. plans to double the size of The Geysers Geothermal Power Plant in northeastern Sonoma County, according to President *Norman R. Sutherland*. The plant, which generates electricity with natural steam brought from within the earth, began operation last summer. It is the first of its kind in America.

PG&E will add a 12,500-kilowatt generating unit to the one of that size already in service at The Geysers. The new unit will cost approximately \$2,200,000.

The steam wells which supply the geothermal plant are owned and operated by the Magma Power Co. and Thermal Power Co., which sell the steam to PG&E. Seven wells have been developed at The Geysers. Four are now being used to supply the first unit.

The new unit will be built adjacent to the first, utilizing common operating, switching and transmission facilities. It will be designed to run automatically, without operators in attendance.

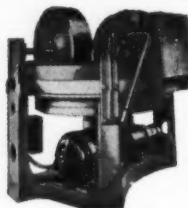
Geothermal projects are possible only where the "magma," or molten mass ordinarily deep within the earth, is close to the surface. Where this occurs, steam formed from water in the magma is emitted through underground fissures. Even more steam is formed by surface water that seeps down to contact the heated rock. At The Geysers, steam is reached and freed by drilling 500 to 700 feet. Then it is piped to the turbines of the electric power generating station.

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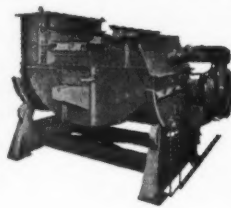
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Pacific Car & Foundry Organizes KW-Westfall

SEATTLE — To operate in close association with the Kenworth Motor Truck Co. of Seattle, Pacific Car and Foundry Co. has purchased the Westfall Equipment Co. of Portland, and renamed it the KW-Westfall Co. R. D. O'Brien, president, announced recently.

John G. Holmstrom, vice president in charge of truck engineering and research for Pacific Car and Foundry and formerly general manager of Kenworth, is president of the new firm. Paul J. Westfall, previously founder, president and principal operating head, is remaining with the new company as a vice president and will devote his efforts to sales. Franklin Neff is vice president and general manager of KW-Westfall, and John Magnuson is chief engineer. Both were previously with Pacific Car and Foundry.

KW-Westfall manufactures three basic models of a rubber-tired, high-speed, off-highway 4x4 tractor for use in logging, construction and mining.

Aircraft Electrical Society Changes Name

LOS ANGELES — Members of the Aircraft Electrical Society recently approved a change in name of the society to Aerospace Electrical Society, according to president Carlyle Smith.

The new name, Smith explained, is in line with the broadened scope of AES interests and activities which includes missiles and space vehicles as well as manned aircraft.

Organized in 1941, the AES maintains a full schedule of activities to inform the aerospace industry of latest technical developments in electricity and electronics.

Stauffer Appoints ESCO Plastic Pipe Distributor

SAN FRANCISCO — Stauffer Chemical Co. has appointed ESCO Corp. as its distributor of industrial plastic pipe and tubing for the eleven Western states, Alaska and Hawaii.

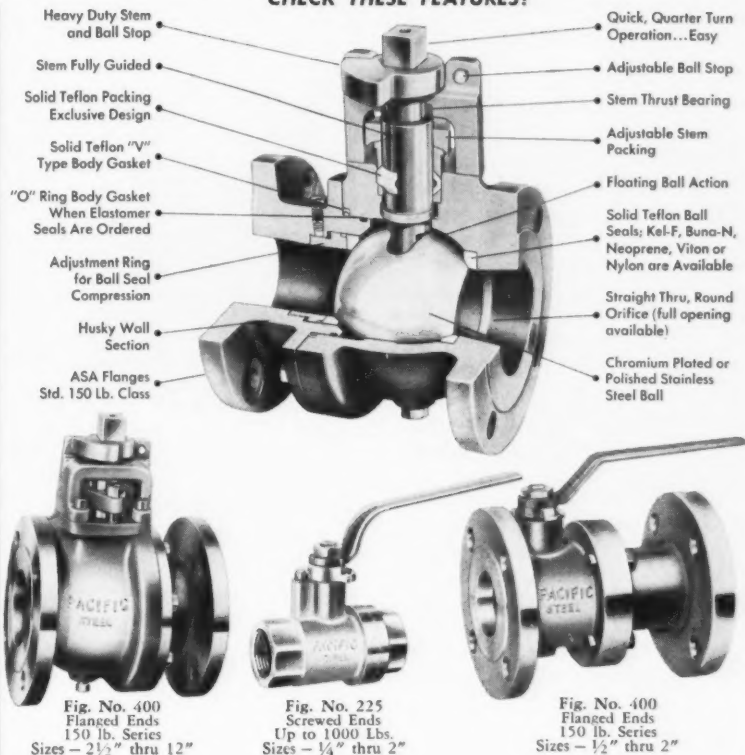
ESCO will maintain stocks of the entire range of plastic pipe produced by Stauffer's Molded Products Div. This includes normal and high impact PVC, semi-rigid styrene copolymer and flexible polyethylene pipe.

Warehouses are located in Portland, Denver, Spokane, San Francisco and Los Angeles.

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Calwire Products, Inc. Acquired by Bostitch

VISALIA, CALIF. — The purchase of Calwire Products, Inc., and Calnail, Inc., its selling organization, by Bostitch, Inc., East Greenwich, R.I. manufacturer of stapling and stitching equipment, has been announced by Bostitch President *Emmet G. Gardner*.

Calwire, located here, manufactures heavy-duty stapling and nailing equipment including air-driven, mallet-driven and hand-operated tools.

Applications for Calwire tools include commercial and residential building and in the industrial and packaging fields, Calwire tools are used for mill work, furniture manufacturing, woodworking assembly and assembling wood crates, skids and attaching corrugated material to wood bases and supports.

Byron D. Gilmore, Calwire president, said the move is particularly advantageous to Calwire because of the nation-wide sales and service organization that Bostitch has.

\$850,000 Office Building Announced for White Stag

PORTLAND—Construction began last month on an \$850,000 office building for White Stag Mfg. Co. and will be ready for occupancy in early 1962, according to *L. L. Rennett*, senior vice president.

The building, which is being erected on a 13½-acre tract adjacent to the firm's plant on S.E. 52nd Ave. and Harney Drive, will have almost 50,000 sq. ft. of floor space. Its construction will bring the plant's total space to 170,000 sq. ft., including manufacturing, tabulating, executive office and show room facilities.

Honor Graduate of GE Crane Control Course



LOS ANGELES — Honored as graduate number 3859, *Joe Garcia*, right, Todd Shipyard plant engineer at San Pedro, Calif., is congratulated by General engineer-instructor *William Toole*, after he completed the GE "quickie course" on latest techniques and developments in crane control devices mocked-up in a traveling classroom currently visiting Southland plants. Almost 4000 plant management personnel have viewed the displays.

Auditone Replacing Burned Out Building

PHOENIX—The Auditone Co., a division of Royal Industries, began construction last month on a new 10,000 sq. ft. plant at 2422 W. Holly.

The company was burned out of its downtown Phoenix plant a year ago and it has since occupied temporary quarters at 1723 E. McDowell.

The new facility will have a special acoustical chamber known as a "Floating Room."

Impregnated Materials New Company Specialty

SO. EL MONTE, CALIF.—*J. E. Stearns Co. Inc.*, a California company, has been formed to bring together the activities of Fiber Glass Service, Inc., and what was formerly the Pre-Preg Div. of Sonic Aviation, it was announced recently by *R. E. Ahrens*, president of the new company.

The Pre-Preg Div. was purchased from Sonic Aviation by *James E. Stearns*, who is vice president and chairman of the executive committee of the company. Ahrens, president of Fiber Glass Service, Inc., pointed out that the integration of the two companies created an organization uniquely qualified to supply impregnated materials to the aircraft and missile industry.

Vanderbilt Industries has been appointed to represent *J. E. Stearns and Co., Inc.*, on a nationwide basis. *Cornelius Vanderbilt* founded Vanderbilt Industries and recently the company has gone into engineering sales representation. Vanderbilt Industries maintains offices in Los Angeles, Washington, Denver, Reno and Seattle.

Steel Service Center Institute Re-elects

SAN FRANCISCO—Re-election of *Robert H. Wasz*, general manager, *Joseph T. Ryerson & Son, Inc.*, as president of the Northern California Chapter of the Steel Service Center Institute for 1961-62 was announced last month.

Others elected to second terms: *Frank B. Stewart*, district manager, U. S. Steel Supply Division, secretary-treasurer, and *Vincent J. Sullivan*, vice president, *Gilmore Steel Corp.*, who will continue as chapter director.

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Northrop to Combine Arcadia, Acme Metal

BEVERLY HILLS, CALIF. — Two Western producers of architectural and metal building products will combine operations under a proposed acquisition and realignment announced last month by Northrop Corp.

In a new move toward expansion of its operations in the architectural metal and building products field, Northrop has entered into an agreement to acquire all the assets of Arcadia Metal Products of Fullerton, Calif., Thomas V. Jones, Northrop president, announced.

By combining operations of Arcadia with those of Acme Metal Molding Co., a wholly-owned subsidiary acquired less than a year ago, Northrop would become one of the nation's most diversified producers of architectural metal products. Combined annual sales of Arcadia and Acme are estimated at \$10,000,000.

Included in the acquisition would be the main Arcadia plant at 801 South Acacia St., Fullerton, consisting of a 50,000 sq. ft. building on a 9.2 acre site. Two Arcadia subsidiaries, Carmel Steel Products, Downey, Calif., and Arcadia Sales Corp., Fullerton, together with a warehousing facility at San Mateo, Calif., also would be acquired under the agreement.


New Hawaiian Firm to Market Monkeypod Panel

HONOLULU—Monkeypod, one of the Pacific's most distinctive woods, will be marketed for the first time as laminated wood paneling through a newly organized firm.


John W. Driver has formed a company which is having the panels made in Japan and marketed on the Mainland. The new firm, Far Eastern Enterprises, will be able to supply 10,000 large sheets of the new paneling a month.

Up to now it has been virtually impossible to form paneling from monkeypod because of its extreme hardness, however, a process has been achieved through the facilities of Asahi Plywood Co., Osaka, Japan, a producer of laminated woods.

H. C. Patterson, president of Hardwoods Hawaii and secretary of Far Eastern Enterprises, said that because of the growing scarcity of monkeypod he believed the laminated wood eventually would take the place of the solid monkeypod in many uses.



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Bourns Steps Up Construction on Riverside Plant



Master plan of Bourns, Inc. 568,000 sq. ft. plant to be located on a 45-acre site in Hunter Industrial Park, Riverside, Calif. Construction is currently underway on the first unit with final completion of the entire plant scheduled for early 1963.

RIVERSIDE, CALIF. — Announcing a speed-up in the construction schedule for the new Bourns, Inc., plant here, *Marlan Bourns*, company president, said that "based on our projected growth, it would be desirable to move into the new plant as soon as possible."

Acceleration of the original schedule was brought about by the urgent need for more manufacturing facilities due to increased sales. Since 1955, sales have increased from about \$2,000,000 to \$12,000,000 in 1960.

Now under construction is the

130,000 sq. ft. north wing which will be initially occupied by a portion of the Trimpot Div. manufacturing operations before the end of the year.

"As soon as possible thereafter," Bourns said, "the remaining Riverside Trimpot operations and the corporate offices will move. The Instrument Div. will consolidate in the present main building and new buildings."

Bourns' Trimpot Div. makes lead-screw actuated potentiometers. The Instrument Div. manufactures potentiometer transducers, AC transducers and instrument systems.

New Die-Set, Press Room Service Center

LOS ANGELES — Machinists' Tool & Supply Co., here, has established a complete die-set service center together with a full press room supply depot.

According to *R. E. Donovan*, president, the new center enables the company to offer custom die-sets almost as economically and fast as standard sets. The assembly center is fully outfitted with Producto catalog die sets and components.

In addition to the die-set assembly center, the company stocks over 2,000 items for press rooms, including punches, dies, feeds, stock straighteners, blank chuck jaws, and jig and fixture components.

New Facilities for Vineland Circuits

NORTH HOLLYWOOD, CALIF. — Vineland Circuits, Inc. recently opened its new facility which will produce precision plated circuits. The 5,000 sq. ft. plant is located at 10655 Chandler Blvd., here.

Helen Lewis, general manager, said the newest equipment for producing reliable printed circuit boards had been installed and that plating will be processed by an affiliate, Vineland Plating Co., under the direction of *Henry Saklad*.

The plating facilities are exclusively designed for processing printed circuit boards, and include nickel, solder-plate, gold and rhodium plating equipment.

Dorsett Electronics Acquires Denver Firm

DENVER — Dorsett Electronics, Inc., of Norman, Okla., has acquired all the outstanding shares of Speedster, Inc., local manufacturer of special purpose industrial heating elements and devices, institutional electric cooking equipment, and short run metal stampings.

The transaction involved an exchange of shares and a cash payment, according to *Lloyd G. Dorsett*, president of Dorsett Electronics.

The Denver firm will operate as the Speedster Products Div. with *John R. Kauffman*, founder of the firm, continuing as president.

Construction of a new plant for the Speedster will begin soon in the Foothills Industrial Park, between Denver and Golden. It will be located adjacent to recently completed facilities of Dorsett's Electronic Controls Div.

"Speedster has excellent metal fabricating capabilities which we will utilize in conjunction with our operations at Electronic Controls Division," Dorsett said.

Western Kraft Building Bag Plant at Beaverton

PORTLAND — Western Kraft Corp. has announced it will build a grocery and carry-bag manufacturing plant in Beaverton and anticipates the plant will be producing on a one-shift basis by fall.

Richard B. Keller, general manager of the company's Northwest Container Div., said the initial producing unit for the newly formed bag division will be a 38,000 sq. ft. plant, costing approximately \$400,000.

The new facility will be built adjacent to the company's Western Corrugated Div. container plant at Beaverton. Initial employment will be about 15 persons.

Thomas Goen, Western Corrugated plant superintendent, will supervise production at the new plant.

Jacuzzi Bros. Open Branch at Phoenix

PHOENIX — Jacuzzi Bros., Inc., pump manufacturing company, has opened a 7,500 sq. ft. branch office at 508 E. Buckeye Rd.

Sam Indelicato has been named manager of the branch which will handle wholesale supplies and service.

Burton Mfg. Building New Northridge Plant

SANTA MONICA, CALIF. — Construction of a new headquarters building in the Nordhoff-Winnetka Industrial Tract at Northridge, Calif., for the Burton Mfg. Co., Santa Monica, is now under way, according to Burton President William J. Miller.

Upon completion of the \$250,000, 27,000-sq. ft. plant about July 1, it will be occupied by Burton's Instrument Div. and Trans Electronics, Inc., a wholly-owned subsidiary now located in Canoga Park, Calif.

Concurrently, Miller announced that Burton's M-D-L Div. has moved from the Santa Monica facility to a plant near the Los Angeles airport.

According to Miller, the operations of the Instrument Div. and Trans Electronics, Inc., are compatible and the integration move should result in increased efficiency.

Samuelson Bros. of Glendale, Calif., is the construction firm on the new Northridge plant. Miller said the company would occupy the facility under long-term lease.

Options have been obtained on two acres adjacent to the Northridge site, upon which the landlord has agreed to build an additional 50,000 sq. ft. plant, when needed, and negotiations are under way to option adjoining acreage for further expansion, Miller said. Coldwell-Banker Co. handled lease negotiations.

New West Coast Plant For Keystone-Seneca

FULLERTON, CALIF.—Keystone-Seneca Wire Cloth Co. has purchased a modern building at 210 W. Walnut St., here, with 44,000 sq. ft. floor space and is installing equipment to produce a full line of insect wire screening, it was announced recently by John H. McNerney, company president.

The plant will be headquarters of the Company's Western Div. and will complement operations of the Southern Div. plant at Brookhaven, Miss., and the Eastern Div. plant at Hanover, Pa.

The Fullerton plant will be under the over-all direction of Kenneth Walker, plant manager, and William Kempton, sales manager.

Keystone-Seneca Wire Cloth Co. is a wholly owned subsidiary of Seneca Wire & Mfg. Co. of Fostoria, Ohio.

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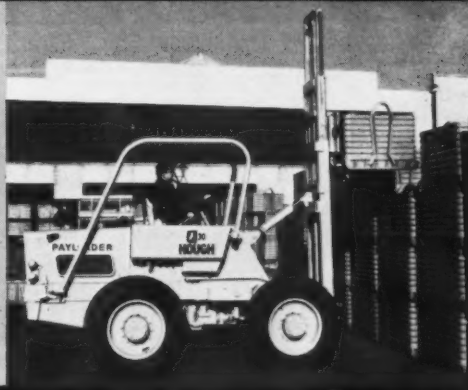
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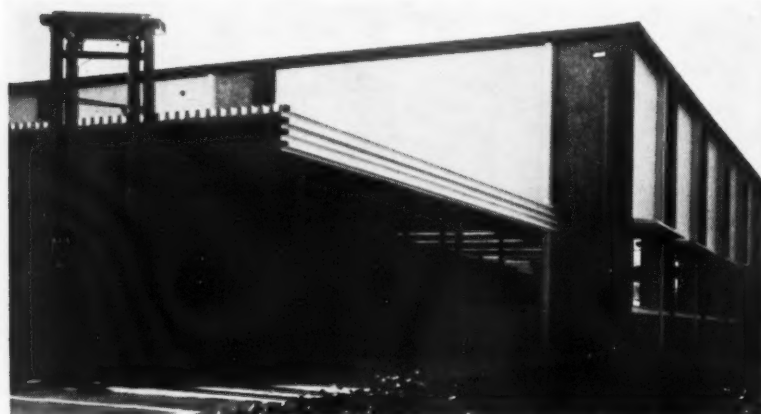
5-A-2

... for more details, circle No. 51 on Reader Service Postcard

Yale & Towne Opens New Lift Truck Facility



(1) Exterior view of Yale Materials Handling Division's new \$300,000 lift truck facility at San Leandro, Calif., one block off the Nimitz Freeway. The new facility is a sales and service center for the San Francisco Bay Area and also a regional parts depot for the 13 Western states. Yale Materials Handling is a division of Yale & Towne Manufacturing Co.



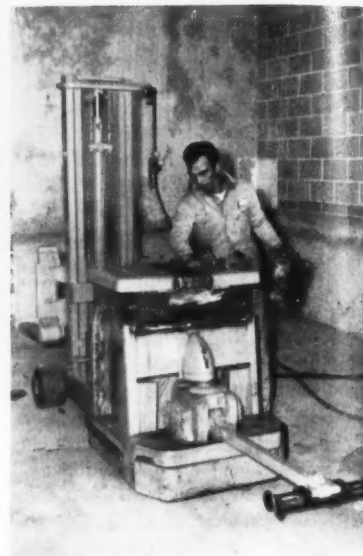
(2) In the above section of the new center used lift trucks are displayed. Here, too, equipment may be rented. The entire facility contains 26,000 ft. of floor space.

SAN LEANDRO, CALIF.—Yale Materials Handling Division, The Yale & Towne Manufacturing Co., has opened a new \$300,000 industrial lift truck facility that houses a modern sales and service center to serve the Bay Area and a regional parts depot to supply the 13 Western states. The 26,000 sq. ft. building is located at 2303 Merced St. here, just one block from the Nimitz Freeway.

Yale's new regional parts depot supplies dealers in the 13 Western states. It stocks all parts for the complete industrial lift truck line, and replenishes dealers' orders directly from its stock. Yale is the first lift truck manufacturer to set up such a major replacement parts depot in the

West. The Western regional depot also serves as a branch parts department for the Sales & Service Branch. Depot inventory is controlled by an electronic data processing system of replacement parts control.

The factory owned Sales & Service Branch serves the Bay Area, from Monterey County north to Mendocino County and east to the San Joaquin and Sacramento valleys. The building contains the largest repair and service facilities in Northern California devoted exclusively to lift trucks. It is equipped to perform any factory modification to new lifts or customer owned trucks. The shop is also equipped to overhaul lift trucks and prepare new trucks for delivery.



(3) Workman paints Yale lift truck in service center paint room. The center is equipped to perform any type of factory modification to new units or to customer-owned lift trucks.

The Branch maintains a fleet of mobile service units for operational maintenance and trouble shooting tasks in user locations, together with several flat bed trucks for equipment pickup and delivery.

The branch's used truck and rental sub-branch, formerly located in Oakland has been consolidated under one roof and is now an integral part of the sales and service branch. The rental fleet on hand is the Bay Area's largest.

Along with the branch and regional parts depot, the new building also houses a Western regional service supervision staff, a district Yale hoist sales office and a regional sales office of the company's lock and hardware division.

Motorized Golf Carts New Industry in Utah

CLEARFIELD, UTAH—A new industry has opened here to produce motorized golf carts for distribution throughout the West, according to *Joseph Wright*, president and general manager of Carts, Inc.

Employment initially is six and will expand to 12 soon. The firm plans to produce two carts a day, expanding to five in the future, at its 442 N. Main St. plant.

Consolidated Freightways Adds 40 New Van Trailers

MENLO PARK, CALIF. — Consolidated Freightways has taken delivery on 40 new van trailers which will virtually complete its current equipment modernization and replacement program begun last year, according to C. R. Christensen, vice president-operations. The new trailers are manufactured in Spokane by the Brown Trailer Div. of Clark Equipment Co.

The trailers are aluminum with sliding tandem axles, and are readily interchangeable with other units of the fleet for movement anywhere in the system, he said.

Consolidated has also ordered three sets of Twin-Tainers manufactured by Highway Trailer Industries as part of its continuing program of container research and development, Christensen reported. The 20-foot Twin-Tainers are designed for rail, ship or over-the-road operation. For highway use they may be locked together and equipped with demountable single or dual axles. Consolidated will experiment with the versatile containers in various types of service, he said.

Christensen said that CF now has nearly 5,000 road trailers in daily service, a high percentage of which are less than one year old. He gave total investment in new equipment in 1960-61 as more than \$16,000,000.

Alaska Communications Firm to Expand Service

ANCHORAGE—John E. Field, president of Communications Engineering, Inc., an Alaskan-founded communications firm with headquarters here, has announced plans to expand service to the entire U. S.

According to Field, South 48 headquarters will be established in San Francisco. He said the unusual reversal in which Alaskan specialists are being exported to the South 48 results from national recognition given his staff for its work in tying in radio with Alaskan telephone systems under adverse conditions.

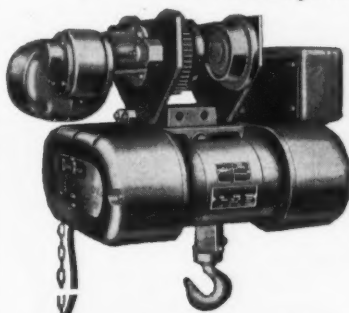
General Electric Co. has named Communications Engineering as a national manufacturer's representative to the independent telephone industry for its new five-channel mobile telephone units.

Other South 48 offices are being established at St. Louis, Mo., and Allentown, Pa.

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Motorola Building Own Operating Gases Plant

PHOENIX—Construction has begun on a \$5,000,000 addition to the Motorola Semiconductor plant which will be used to manufacture three operating gases: hydrogen, oxygen and nitrogen.

The addition will cover three acres in the southwest corner of the 54-acre Motorola property, according to C. Lester Hogan, vice president and general manager.

Hogan said the new gas facility would reduce truck traffic in and around the plant, provide a safer operation at Motorola and save the company \$20,000 annually.

Some 150 heavy trucks a month are required to deliver operating gases to the semiconductor plant, Hogan said, and these will be eliminated when the addition is finished.

Union Oil Co. Purchases Pacific Chemical Assets

LOS ANGELES—Purchase by Union Oil Co. of California of certain assets of the Pacific Chemical & Fertilizer Co., a Hawaiian corporation in the process of liquidation, for approximately \$6,500,000 was announced last month by Reese H. Taylor, chairman.

Assets purchased include 10.4 acres in the industrial area of Honolulu and the Pacific Guano Co., a wholly-owned California subsidiary of Pacific Chemical & Fertilizer Co.

Pacific Guano, a marketer of petrochemicals on the West Coast, will operate independently, with ownership vested in Union's subsidiary, Collier Carbon and Chemical Corp.

The Hawaiian real estate is adjacent to Union Oil's marketing terminal at Honolulu.

Weyerhaeuser Moving Rilco Headquarters to Tacoma

TACOMA, WASH. — Headquarters of Weyerhaeuser Co's Rilco engineered wood products division will be moved from St. Paul, Minn., to Tacoma on August 1, according to Dale L. Gaeth, vice president-manager of the division.

Rilco produces laminated wood beams, arches and trusses at plants in Albert Lea, Minn., and Cottage Grove, Ore. The move will bring a reduction in administrative expenses and a greater coordination with other Weyerhaeuser offices in Tacoma, Gaeth said.

Transportable Container for Minuteman Missile



When engineer at control panel has secured container in upright position he will lower missile housed inside into underground launch site. Container is 63-ft. long and is raised into upright position by actuating devices fitted to front of trailer assembly. System was built by Bendix-Pacific.

NORTH HOLLYWOOD, CALIF.—A transporter-erector system that will haul the Air Force Minuteman missile to underground launching sites was demonstrated here for the trade press by its developer, Bendix-Pacific Div., Bendix Corp.

The container is designed to remove the missile from the assembly plant to the launch site via highway, rail or air transport. The missile is enveloped by the container which can be anchored to a trailer assembly.

Prior to emplacement of the missile underground, the entire container is raised to a vertical position and the missile gently lowered into the concrete silo by a hydraulic-powered hoist with 100,000 lbs. capacity.

The full container itself is raised by two erector actuators capable of handling 108,000 lbs. When empty the container weighs 8500 lbs., and is 63½ ft. long, eight ft. wide and high.

Consolidated Metal Opens New Warehouse at Hemet

HEMET, CALIF. — The Consolidated Metal Products, Inc., of Elkhart, Ind., has announced the opening of a new 20,000 sq. ft. warehouse center here for the distribution of aluminum to mobile home manufacturers.

The company is a national distributor of Kaiser Aluminum products for the mobile home industry.

Firstunited Acquires Union Die Casting Co.

LOS ANGELES — In a recent stock purchase arrangement involving approximately \$1,000,000, Firstunited Corp., here, gained controlling interest in Union Die Casting Co. of Whittier, Calif.

B. Sherman Green, formerly marketing vice president of Union Die Casting, was named president of the company, and E. D. White, formerly executive vice president, has been appointed manufacturing vice president. Union Die Casting, which began its custom die casting operation in 1925, is located at 676 West Putnam Drive, Whittier.

Crown Zellerbach Building New LA Container Plant

LOS ANGELES — Crown Zellerbach Corp. is constructing a new corrugated shipping container plant in the Los Angeles area to provide improved customer service in Southern California.

The new facility will also supply corrugated sheets to an adjacent plant to be built by Fruit Growers Supply Co. for the fabrication of containers to be used in the packaging of citrus fruits.

The new plant will be located in the City of Industry east of downtown Los Angeles. Covering 110,000 sq. ft., it is expected to be in operation within a year.

Classified Section

Space is sold as advertisers' inches. All advertisements in this section are 1/4 inch short of contracted space to allow for borders and composition. Rates are \$16.00 a column inch. Copy should be sent in by the 20th of preceding month if proofs are required; by the 25th if no proofs are required.

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WESTERN INDUSTRY/MAY 1961

Contract News for the West

The U. S. Army Ordnance District, San Francisco, with headquarters at 1515 Clay St., Oakland, Calif. awarded a \$10,893,082 contract to *Aerojet General Corp.*, Sacramento, Calif., March 30, for production of additional rocket motors for the HAWK anti-aircraft missile. Other contracts awarded by the San Francisco Ordnance District include:

Food Machinery & Chemical Corp., San Jose, Calif., \$2,458,071 prime contract for 113 HAWK missile loader vehicles. Also a \$130,610 contract for an additional pilot model of the Mauler vehicle.

Pacific Car & Foundry Co., Renton, Wash., \$911,400 for 200 seventeen and one-half ton, and 200 45-ton capacity winches for the M-88 Army tank retriever vehicles. Also \$78,768 in spare parts for winches for Army tank retrievers.

The U. S. Army Ordnance District, Los Angeles, with headquarters at 55 S. Grand Ave., Pasadena, announced March 24 the award of over \$2,000,000 in Army Ordnance contracts during the past four weeks to the following contractors:

Sperry Utah Engineering Laboratory, Salt Lake City, \$950,000 for continued Sergeant missile research and development; \$275,197 for Sergeant missile ground handling and test equipment; \$147,296 for Sergeant repair parts; and \$99,000 for technical publications.

McCulloch Corp., Los Angeles, \$306,116 for six-cylinder aircraft type engines.

Autonetics Div., North American Aviation Corp., Downey, Calif., \$210,491 for continued research and development of a field artillery digital automatic computer.

Nortronics, Div. of Northrop Corp., Anaheim, Calif., \$140,842 for additional engineering services on Hawk missile system.

Douglas Aircraft Co., Inc., Santa Monica, Calif., \$134,743 for Nike missile system repair parts.

Gilfillan Brothers, Inc., Los Angeles, \$47,827 for a prototype accessory set; \$46,484 for Corporal missile system spare parts; and \$27,171 for Sergeant missile telemetry equipment.

Aerojet-General Corp., Downey, a \$49,419 classified research and development contract.

California Computer Products, Inc., Downey, \$26,857 for continued research and development on an automatic vehicle checkout system.

Other contracts reported to WESTERN INDUSTRY during April include:

Interstate Electronics Corp., Anaheim, Calif., \$9,500,000 from the Navy to design, manufacture and test instrumentation systems for the 616-Class of nuclear-powered submarines in the Polaris program.

Garrett Corp., Los Angeles, \$3,000,000 for 180 central air data systems from Lockheed Aircraft Corp.

AirResearch Mfg. Div., Garrett Corp., Phoenix, over \$1,000,000 for development and delivery of pumping systems for laminar flow control test aircraft from Norair Div., Northrop Corp.

Hoffman Electronics Corp.'s Military Products Div., over \$2,300,000 from U. S. Navy Bureau of Ships for frequency shift converters.

Houston Fearless Corp.'s Westwood Div., Beverly Hills, Calif., \$1,585,000 for design, manufacture, and installation of operational support equipment for U. S. Air Force programs under development at Lockheed.

Bendix Pacific Div., Bendix Corp., North Hollywood, Calif., nearly \$1,000,000 for five replacement systems to lower the Minuteman intercontinental ballistic missile into underground launch tubes for Boeing Airplane Co.

Packard Bell Electronics, Los Angeles, \$945,000 to manufacture airborne Identification Friend or Foe sets for five NATO countries. Also, \$790,000 prime contracts to produce airborne communications and identification equipment for U. S. Naval Bureau of Weapons.

Panellit Div., Information Systems, Inc., Los Angeles, \$550,000 for instrumentation for General Electric Co's use at Hanford Atomic Products Operation, Richland, Wash.

Servomechanisms Inc. \$520,635 follow-on orders from Martin Co. for production of True Airspeed Computers.

Nuclear Propulsion Div., Aerojet-General Corp., Azusa, Calif., a \$500,000 Air Force contract for nuclear rocket engine research.

Tracerlab's Reactor Monitoring Center, Richmond, Calif., \$334,384 from Navy Dept., Bureau of Ships, to manufacture 58 air particle monitors.

Bissett-Berman Corp., Los Angeles, a contract for \$155,132 for special modulation studies and experimental equipment for specialized data processing applications and a \$137,431 contract for studies of correlation techniques for data processing applications. Both contracts from Air Research and Development Command, Rome Air Development Center, Griffiss Air Force Base, N. Y.

Los Angeles Die Casting Co., \$250,000 for tooling and production of various home appliance components from Industrial Div., Temco Electronics and Missiles Co.

Marshall Laboratories, San Marino, Calif., \$227,000 for a set of six second harmonic magnetometers from California Institute of Technology, Jet Propulsion Laboratory.

Micromega Corp., Venice, Calif., \$175,000 for development and production of UHF parametric amplifiers for tropo-scatter communications systems from Page Communications Engineers, Inc.

Gladding, McBean & Co., Los Angeles, \$171,000 for further production of ceramic radomes for Sparrow III missile from Raytheon Mfg. Co.

Reconnaissance Systems Laboratory, Sylvania Electric Products, Inc., Mountain View, Calif., \$160,000 from Air Force for development and fabrication of anti-intrusion equipment.



westerners at work



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Wilkerson Corp.



Glenn Herz
Hyster



F. T. Hickenlooper
U. S. Steel



L. F. Lyons
American Avionics



H. V. Gumma
CF&I



W. F. Girouard
Librascope



E. P. Skralakis
Omark



M. R. Leeper
U. S. Plywood

■ **R. C. Baker**, has been named director of engineering, Wilkerson, Corp., Englewood, Colo.

■ **Glenn Herz** and **James L. Woodley** have been elected vice presidents engineering and manufacturing, respectively, Hyster Co., Portland.

■ **Frank T. Hickenlooper** has been appointed general superintendent, U. S. Steel's Utah Pipemill, Provo, Utah.

■ **Lambert F. Lyons** is newly elected vice president, director of engineering, American Avionics, Inc., West Los Angeles.

■ **Harold V. Gumma** is new superintendent, rolling and finishing depts., Colorado Fuel & Iron Corp., Pueblo, to replace retiring **Victor W. Johnson**.

■ **W. F. Girouard** has been named director industrial engineering, Librascope Div., General Precision, Inc., Glendale, Calif.

■ **Edward P. Skralakis** has been appointed executive vice-president, Omark Industries, Inc., Portland, in charge of all operations in U. S.

■ **Marshall R. Leeper**, Eugene, Ore., has been named vice president U. S. Plywood Corp's West Coast manufacturing operations.

■ **Ora F. Kuhlman** is newly appointed director of engineering, Key Resistor Corp., Gardena, Calif.

■ **Peter Churm** has been named vice president, Fluorocarbon Co., Anaheim, Calif.

■ **Vernon B. Benfer** has joined Acoustica Associates, Inc., as general manager of new General Ultrasonics Div., Los Angeles.

■ **H. Edwin Berger** is newly appointed superintendent of metallurgical engineering, Kaiser Steel Corp., Fontana, Calif.

■ **Antti P. Raiha** has been appointed chief engineer, Burgmaster Corp., Gardena, Calif.

■ **Earle Schirmer** has been named to the new post of chief engineer, Zero Mfg. Co., Burbank, Calif.

■ **Charles D. Watrous** is newly named manager, West Coast region, San Francisco, Stanley Steel Strapping, div. Stanley Works.

■ **Dr. John A. F. Gerrard** is new director of electronics engineering, Bendix-Pacific Div., Bendix Corp., North Hollywood, Calif.

■ **Robert W. Grant** has been appointed administrative engineer for the Metals Div., Stauffer Chemical Co., Richmond, Calif.

■ **Charles L. Long** is new Western sales manager for Chainveyor Corp. with headquarters at Los Angeles.

■ **Karl Brandenburg** has been named chief engineer, Modernair Corp., San Leandro, Calif.

■ **William H. Roddis** has been appointed hardwood specialist at Weyerhaeuser Co's technical center, Longview, Wash.

■ **Dr. Ercole E. Motta** has joined Dynamic Science Corp., San Marino, Calif., as director of chemical sciences.

■ **A. V. Gangnes** and **Dr. J. F. Jenkins, Jr.** have been appointed general manager and director of engineering, respectively, at Interstate Electronics Corp., Anaheim, Calif.

■ **Claire Bell** has joined Varian Associates, Palo Alto, Calif., as manager, instrument product engineering.

■ **Marvin G. Whitney** has been named director of operations, Semiconductor Div., Hoffman Electronics, El Monte, Calif.

■ **H. Richard Alexander** has been appointed vice president, Harvill Corp., Los Angeles, to head a group of company operations.

■ **M. D. Macdonald** has joined the San Francisco staff of Arthur D. Little, Inc.

■ **Louis L. Reasor** has been appointed manager, Hughes Aircraft Co.'s Tucson, Ariz., division.

■ **Harlan A. James** is newly named manager, Manufacturing Div., Pacific Automation Products, Inc., Glendale Calif.

■ **J. Philip Murphy** is newly elected president of Yuba Consolidated Industries, Inc., San Francisco.

■ **Lawrence Nadel** has been appointed director, System Program Office, Western Development Laboratories, Philco Corp., Palo Alto, Calif.

■ **John D. Gum** has been named director of engineering, Photo-Optical Div., Consolidated Systems Corp., Monrovia, Calif.

■ **Vern Johnson**, chief lumber inspector for Western Pine Association, retired May 1 after a 55-year sawmill career.

■ **Stuart R. Ferguson** has joined Analytical & Control Div., Consolidated Electrodynamics Corp., Pasadena, Calif., as principal manufacturing engineer.

■ **F. H. Henrekin**, Vallejo, Calif., has been elected president, Northern California Industrial Managers Association.

■ **George Konkol** is newly appointed general manager, Microwave Device Operations, Sylvania Electric Products, Inc., Mountain View, Calif.

■ **Herbert Rosenberg** has been appointed manager, digital circuits dept., Marshall Laboratories, Torrance, Calif.

■ **Frank R. Osborne** has been elected president of B. H. Hadley, Inc., Pomona, Calif.

■ **Claude H. Smith** has been appointed general manager, Minneapolis-Honeywell's Ordnance Div., Duarte, Calif.

■ **J. E. Rheim** has resigned as president, general manager and director of Rohr Aircraft Corp., Chula Vista, Calif., for health reasons.

■ **Harry Harris**, pioneer furniture manufacturer, Los Angeles, passed away recently.

■ **Grove Gleason Lautzenhiser** has assumed the position of traffic manager for Port of Anchorage, Alaska.

■ **T. B. Slattery** of General Electric's TEMPO component, Santa Barbara Calif., has departed for Belgrade Yugoslavia, on a State Dept. assignment.

■ **Samuel Todd Huey** and **Lee M. Hester** have joined the engineering staff of Lynch Communications Systems Inc., San Francisco.

■ **Dr. John M. Richardson**, Chief Radio Standards Laboratory, National Bureau of Standards, Boulder, Colo. has been elected a Fellow, American Physical Society.

■ **Conrad J. Oliver** has joined Granger Associations, Palo Alto, Calif., as chief mechanical engineer.

■ **Norris Murray** has joined Sierra Engineering Co., Sierra Madre, Calif., to develop new flight equipment.

■ **Fred Barish** has been appointed president and chairman of board Datascope Corp., Culver City, Calif.

■ **Maurice Stillwell** has been named manager, Equipment Plant, Micro-Semiconductor Corp., Culver City Calif.

■ **George R. Newton** is newly appointed West Coast manager, Los Angeles, for Allen Mfg. Co.

■ **J. Alfred Earl** has been appointed director of research, Physical Sciences Corp., Pasadena, Calif.

■ **M. P. Klick** and **Theodore R. Rooney** have retired from executive posts with U. S. Steel's Consolidated Western Div., Los Angeles.

■ **Richard C. Wiley**, California State Polytechnic College, San Luis Obispo, received Adams Memorial Award for contributions in welding education.

■ **James V. Ditto** has resigned as manager of Trans-Alaska Telephone Co., Anchorage. He is succeeded by **Thomas C. Harris**.

■ **Alan R. Parsons** has been named San Francisco district manager for Nash Hammond, Inc.

■ **G. H. Gentry** succeeds retiring **A. M. McMillan** as Los Angeles district manager, Harvey Hubbell, Inc., and **Wayne Brassey** succeeds retiring **Grover Anderson** as San Francisco district manager.

■ **Lon Mapel**, general manager Essick Machinery Co., Los Angeles, has retired after 28 years with the firm.

■ **Don N. Lee** has been named manager, West Coast operations, Rese Engineering Inc.'s new facility at Gardena, Calif.

■ **J. C. Smith** has been named assistant to general manager, sales, Pacific Coast Div., Bethlehem Steel Co., San Francisco.

■ **Francis T. Fox**, general manager Los Angeles Dept. of Airports, has been appointed by President **John F. Kennedy** as a member of "Project Horizon."

■ **Robert Slater** joins Pacific Sealants, Long Beach, Calif., as vice president and general manager.

■ **Gene Bledsoe** and **M. Wayne Lemons** have been appointed manager of material and as purchasing agent, respectively, of Space Electronics Corp., Glendale, Calif.

■ **Joseph H. Schellman** has been elected president of Pendar, Inc., Van Nuys, Calif.

■ **A. W. Billeter** succeeds **Vergil Duensing**, who passed away recently, as manager, Central Scientific Co.'s Santa Clara, Calif., branch.

■ **Dr. John B. Opfell** has joined staff of Dynamic Science Corp., Pasadena, Calif.

■ **C. B. Wegner** has been appointed general legal counsel, Los Angeles Army Ordnance District.

■ **Ed Lensch** has been named territory manager, wholesale operations, White Motor Co.'s Los Angeles branch area.

■ **A. J. Pfister** is newly named Pacific Coast district manager at Los Angeles for new valve division of Manning, Maxwell & Moore, Inc.

■ **Reese Lamb** of Weston, Ore., has been named president Northwest Canners and Freezers Association.

■ **Dr. Charles W. Aby**, San Rafael, Calif., has been named to Board of six-county Bay Area Air Pollution Control District, San Francisco.

■ **Edward P. Tagge** has been named assistant to the president, Beckman Instruments, Inc., Fullerton, Calif.

■ **H. Harrison Fuller**, vice president Bethlehem Steel Co. West Coast operations, San Francisco, since 1944, passed away April 22.

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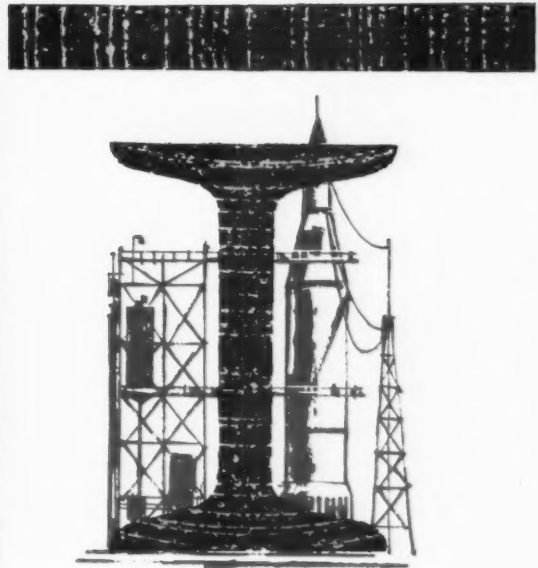
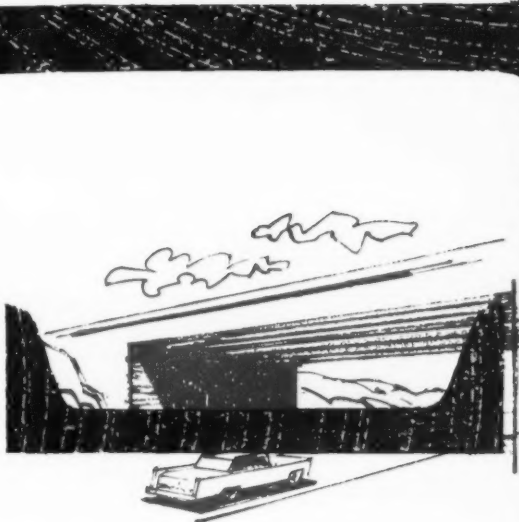
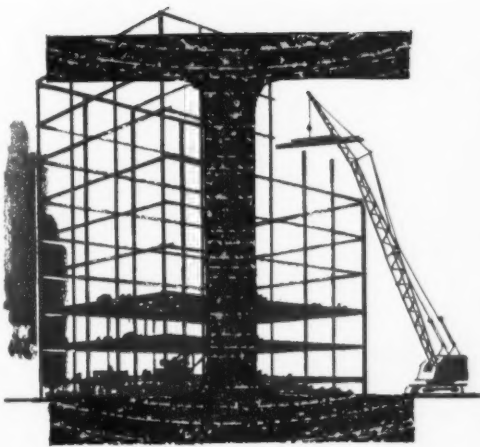
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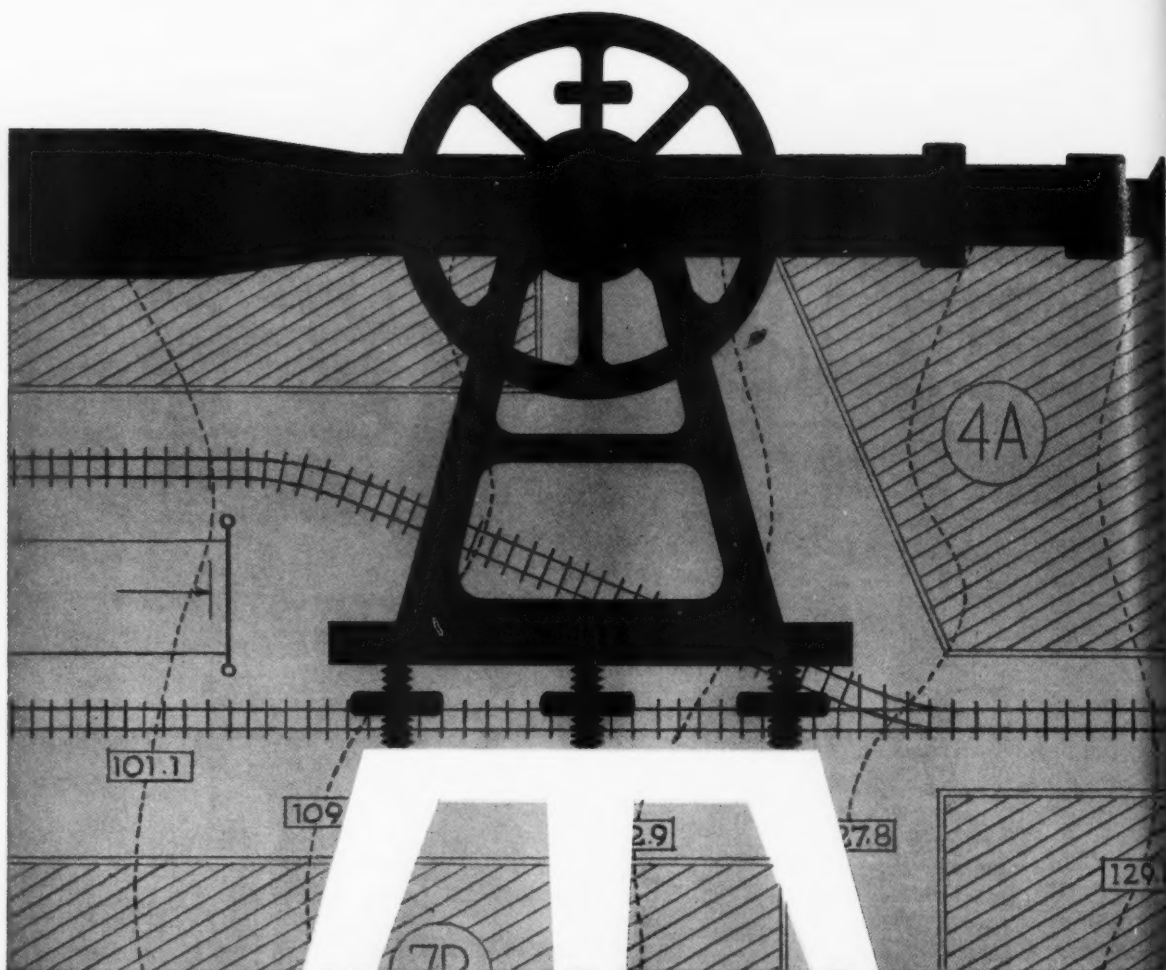
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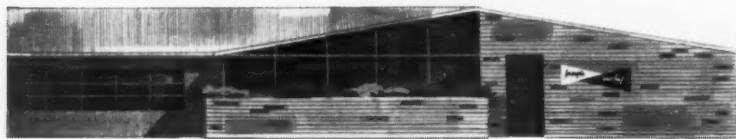


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